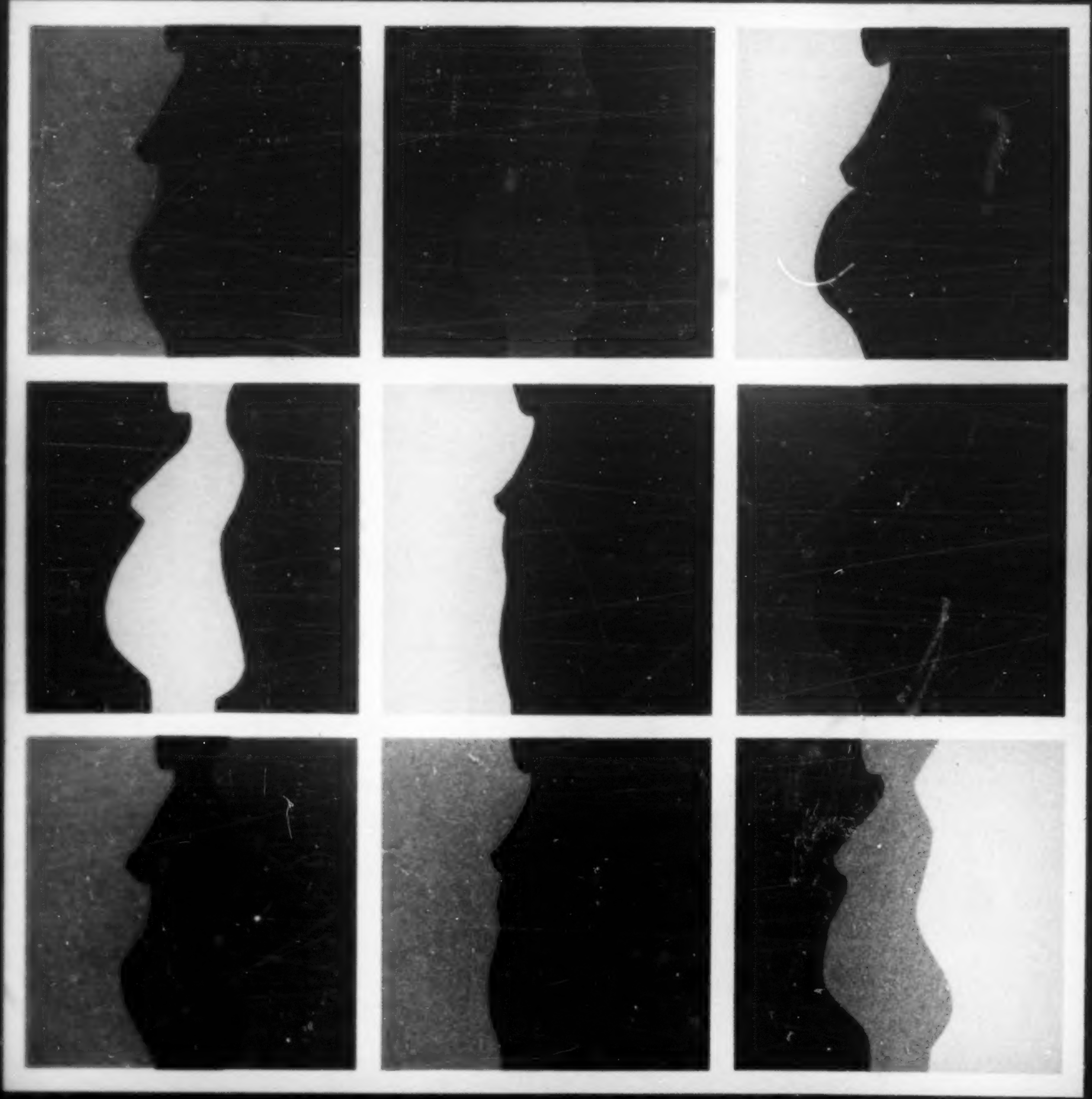
A5160-1

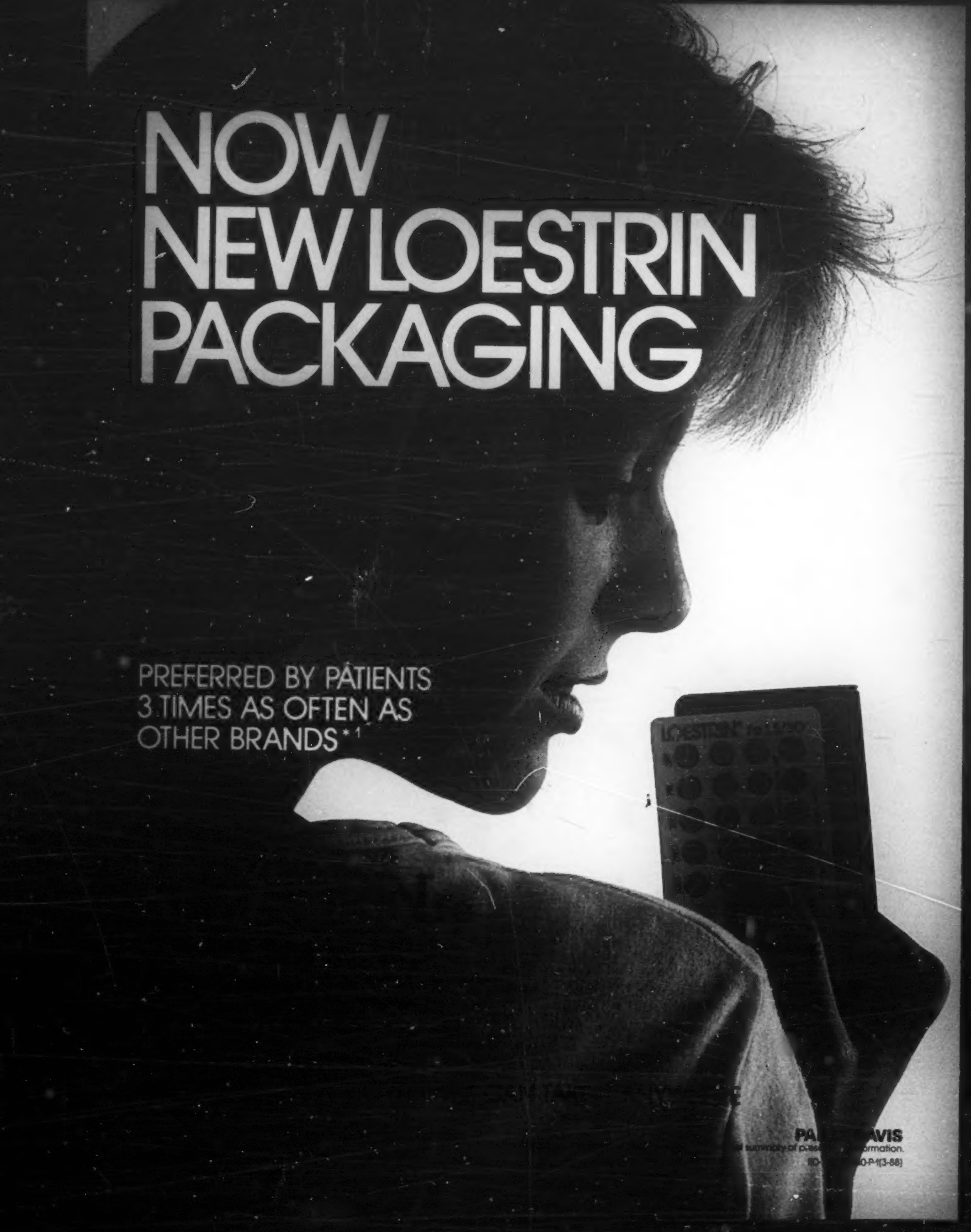
# Family Planning Perspectives

Volume 20, Number 5, September/October 1988

Sterilization Regret in Montreal
Public Funding of Fertility Control Services
Beliefs About Sterilization Among Poor Women

Fertility and Family Planning: Lessons from the NSFG

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**LOESTRIN, 21**
(Norethindrone Acetate and Ethinyl Estradiol Tablets, USP)

**LOESTRIN, Fe**
(Norethindrone Acetate and Ethinyl Estradiol Tablets, USP and Ferrous Fumarate Tablets, USP)

**Before prescribing, please see full prescribing information. A Brief Summary follows:**
**INDICATIONS AND USAGE:** Loestrin 21 and Loestrin Fe are indicated for the prevention of pregnancy in women who elect to use oral contraceptives (OCs) as a method of contraception. **Dose-Related Risk of Thromboembolism from Oral Contraceptives:** Two studies have shown a positive association between the dose of estrogens in oral contraceptives and the risk of thromboembolism. For this reason, it is prudent and in keeping with good principles of therapeutics to minimize exposure to estrogen. The OC product prescribed for any given patient should be that product which contains the least amount of estrogen that is compatible with an acceptable pregnancy rate and patient acceptance. It is recommended that new acceptors of OCs be started on preparations containing 0.05 mg or less of estrogen. **CONTRAINDICATIONS:** OCs should not be used in women with any of the following conditions: 1. Thrombophlebitis or thromboembolic disorders; 2. A past history of deep vein thrombophlebitis or thromboembolic disorders; 3. Cerebral vascular or coronary artery disease; 4. Known or suspected carcinoma of the breast; 5. Known or suspected estrogen-dependent neoplasia; 6. Undiagnosed abnormal genital bleeding; 7. Known or suspected pregnancy (see Warning No. 5); 8. Benign or malignant liver tumor which developed during the use of oral contraceptives or other estrogen-containing products.

**WARNINGS**

> **Cigarette smoking increases the risk of serious cardiovascular side effects from oral contraceptive use. This risk increases with age and with heavy smoking (15 or more cigarettes per day) and is quite marked in women over 35 years of age. Women who use oral contraceptives should be strongly advised not to smoke.**
>
> The use of oral contraceptives is associated with increased risk of several serious conditions including thromboembolism, stroke, myocardial infarction, hepatic adenoma, gallbladder disease, and hypertension. Practitioners prescribing oral contraceptives should be familiar with the following information relating to these risks.

1. *Thromboembolic Disorders and Other Vascular Problems:* An increased risk of thromboembolic and thrombotic disease associated with the use of OCs is well established. Three principal studies in Great Britain and three in the United States have demonstrated an increased risk of fatal and nonfatal venous thromboembolism and stroke, both hemorrhagic and thrombotic. These studies estimate that users of OCs are 4 to 11 times more likely than nonusers to develop these diseases without evident cause. **Cerebrovascular Disorders:** In a collaborative American study of cerebrovascular disorders in women with and without predisposing causes, it was estimated that the risk of hemorrhagic stroke was 2.0 times greater in users than in nonusers and the risk of thrombotic stroke was 4 to 9.5 times greater in users than in nonusers. **Myocardial Infarction:** An increased risk of myocardial infarction associated with the use of OCs has been reported, confirming a previously suspected association. These studies, conducted in the United Kingdom, found, as expected, that the greater the number of underlying risk factors for coronary artery disease (cigarette smoking, hypertension, hypercholesterolemia, obesity, diabetes, history of preeclamptic toxemia), the higher the risk of developing myocardial infarction, regardless of whether the patient was an OC user or not. OCs, however, were found to be a clear additional risk factor. In terms of relative risk, it has been estimated that OC users who do not smoke (smoking is considered a major predisposing condition to myocardial infarction) are about twice as likely to have a fatal myocardial infarction as nonusers who do not smoke. OC users who are also smokers have about a 5-fold increased risk of fatal infarction compared to users who do not smoke, but about a 10- to 12-fold increased risk compared to nonusers who do not smoke. Furthermore, the amount of smoking is also an important factor. In determining the importance of these relative risks, however, the baseline rates for various age groups must be given serious consideration. The importance of other predisposing conditions mentioned above in determining relative and absolute risks has not as yet been quantified; it is quite likely that the same synergistic action exists, but perhaps to a lesser extent. **Risk of Dose:** In an analysis of data derived from several national adverse reaction reporting systems, British investigators concluded that the risk of thromboembolism, including coronary thrombosis, is directly related to the dose of estrogen used in oral contraceptives. Preparations containing 100 mcg or more of estrogen were associated with a higher risk of thromboembolism than those containing 50 to 80 mcg of estrogen. Their analysis did suggest, however, that the quantity of estrogen may not be the sole factor involved. This finding has been confirmed in the United States. Careful epidemiological studies to determine the degree of thromboembolic risk associated with progestogen-only OCs have not been performed. Cases of thromboembolic disease have been reported in women using these products, and they should not be presumed to be free of excess risk. **Persistence of Risk:** In confirmation of earlier reports, two studies have suggested that an increased risk may persist for as long as 6 years after discontinuation of oral contraceptive use for cerebrovascular disease and 9 years for myocardial infarction. In addition, a prospective study suggested the persistence of risk for subarachnoid hemorrhage. **Estimate of Excess Mortality from Circulatory Diseases:** A large prospective study carried out in the U.K. estimated the mortality rate per 100,000 women per year from diseases of the circulatory system for users and nonusers of OCs according to age, smoking habits, and duration of use. The overall excess death rate annually from circulatory diseases for OC users was estimated to be 20 per 100,000 (ages 15 to 34 – 5/100,000; ages 35 to 44 – 33/100,000; ages 45 to 49 – 140/100,000), the risk being concentrated in older women, in those with a long duration of use, and in cigarette smokers. It was not possible, however, to examine the interrelationships of age, smoking, and duration of use, nor to compare the effects of continuous versus intermittent use. Although the study showed a 10-fold increase in death due to circulatory diseases in users for 5 or more years, all of these deaths occurred in women 35 or older. Until larger numbers of women under 35 with continuous use for 5 or more years are available, it is not possible to assess the magnitude of the relative risk for this younger age group. The available data from a variety of sources have been analyzed to estimate the risk of death associated with various methods of contraception. The estimates of risk of death for each method include the combined risk of the contraceptive method (eg, thromboembolic and thrombotic disease in the case of oral contraceptives) plus the risk attributable to pregnancy or abortion in the event of method failure. This latter risk varies with the effectiveness of the contraceptive method. The study concluded that the mortality associated with all methods of birth control is low and below that associated with childbirth, with the exception of OCs in women over 40 who smoke. (The rates given for pill only/smokers for each age group are for smokers as a class. For "heavy" smokers [more than 15 cigarettes a day] the rates given would be about double; for "light" smokers [less than 15 cigarettes a day] about 50 percent.) The lowest mortality is associated with the condom or diaphragm backed up by early abortion. The risk of thromboembolic and thrombotic disease associated with OCs increases with age after approximately age 30 and, for myocardial infarction, is further increased by hypertension, hypercholesterolemia, obesity, diabetes, or history of preeclamptic toxemia and especially by cigarette smoking. The physician and the patient should be alert to the earliest manifestations of thromboembolic and thrombotic disorders (eg, thrombophlebitis, pulmonary embolism, cerebrovascular insufficiency, coronary occlusion, retinal thrombosis, and mesenteric thrombosis). Should any of these occur or be suspected, the drug should be discontinued immediately. A four- to six-fold increased risk of postsurgery thromboembolic complications has been reported in OC users. If feasible, OCs should be discontinued at least 4 weeks before surgery of a type associated with an increased risk of thromboembolism or prolonged immobilization. 2. *Ocular Lesions:* There have been reports of neuro-ocular lesions, such as optic neuritis or retinal thrombosis, associated with the use of OCs. Discontinue OC medication if there is unexplained, sudden or gradual, partial or complete loss of vision; onset of proptosis or diplopia; papilledema; or retinal vascular lesions, and institute appropriate diagnostic and therapeutic measures. 3. *Carcinoma:* Long-term continuous administration of either natural or synthetic estrogen in certain animal species increases the frequency of carcinoma of the breast, cervix, vagina, and liver. Certain synthetic progestogens, none currently contained in OCs, have been noted to increase the incidence of mammary nodules, benign and malignant, in dogs. In humans, three case control studies have reported an increased risk of endometrial carcinoma associated with the prolonged use of exogenous estrogen in postmenopausal women. One publication reported on the first 21 cases submitted by physicians to a registry of cases of adenocarcinoma of the endometrium in women under 40 on OCs. Of the cases found in women without predisposing risk factors for adenocarcinoma of the endometrium (eg, irregular bleeding at the time OCs were first given, polycystic ovaries), nearly all occurred in women who had used a sequential OC. These products are no longer marketed. No evidence has been reported suggesting an increased risk of endometrial cancer in users of conventional-combination or progestogen-only OCs. Several studies have found no increase in breast cancer in women taking OCs or estrogens. One study, however, while also noting no overall increased risk of breast cancer in women treated with OCs, found an excess risk in the subgroups of OC users with documented benign breast disease. A reduced occurrence of benign breast tumors in users of OCs has been well-documented. In summary, there is at present no confirmed evidence from human studies of an increased risk of cancer associated with OCs. Close clinical surveillance of all women taking OCs is, nevertheless, essential. In all cases of undiagnosed persistent or recurrent abnormal vaginal bleeding, appropriate diagnostic measures should be taken to rule out malignancy. Women with a strong family history of breast cancer or who have breast nodules, fibrocystic disease, or abnormal mammograms should be monitored with particular care if they elect to use OCs instead of other methods of contraception. 4. *Hepatic Tumors:* Benign hepatic adenomas have been found to be associated with the use of OCs. One study showed that OC formulations with high hormonal potency were associated with a higher risk than lower potency formulations. Although benign, hepatic adenomas may rupture and may cause death through intra-abdominal hemorrhage. This has been reported in short-term as well as long-term users of OCs. Two studies relate risk with duration of use of the contraceptive, the risk being much greater after 4 or more years of OC use. While hepatic adenoma is a rare lesion, it should be considered in women presenting abdominal pain and tenderness, abdominal mass or shock. A few cases of hepatocellular carcinoma have been reported in women taking oral contraceptives. The relationship of these drugs to this type of malignancy is not known at this time. 5. *Use in or Immediately Preceding Pregnancy, Birth Defects in Offspring, and Malignancy in Female Offspring:* The use of female sex hormones – both estrogenic and progestational agents – during early pregnancy may seriously damage the offspring. It has been shown that females exposed *in utero* to diethylstilbestrol, a nonsteroidal estrogen, have an increased risk of developing in later life a form of vaginal or cervical cancer that is ordinarily extremely rare. This risk has been estimated to be of the order of 1 in 1,000 exposures or less. Although there is no evidence at the present time that OCs further enhance the risk of developing this type of malignancy, such patients should be monitored with particular care if they elect to use OCs instead of other methods of contraception. Furthermore, a high percentage of such exposed women (from 30% to 90%) have been found to have epithelial changes of the vagina and cervix. Although these changes are histologically benign, it is not known whether this condition is a precursor of vaginal malignancy. Male children so exposed may develop abnormalities of the urogenital tract. Although similar data are not available with the use of other estrogens, it cannot be presumed that they would not induce similar changes. An increased risk of congenital anomalies, including heart defects and limb defects, has been reported with the use of sex hormones, including OCs, in pregnancy. One case control study has estimated a 4.7-fold increase in risk of limb-reduction defects in infants exposed *in utero* to sex hormones (OCs, hormonal withdrawal tests for pregnancy or attempted treatment for threatened abortion). Some of these exposures were very short and involved only a few days of treatment. The data suggest that the risk of limb-reduction defects in exposed fetuses is somewhat less than 1 in 1,000 live births. In the past, female sex hormones have been used during pregnancy in an attempt to treat threatened or habitual abortion. There is considerable evidence that estrogens are ineffective for these indications, and there is no evidence from well-controlled studies that progestogens are effective for these uses. There is some evidence that triploidy and possibly other types of polyploidy are increased among abortuses from women who become pregnant soon after ceasing OCs. Embryos with these anomalies are virtually always aborted spontaneously. Whether there is an overall increase in spontaneous abortion of pregnancies conceived soon after stopping OCs is unknown. It is recommended that for any patient who has missed two consecutive periods, pregnancy should be ruled out before continuing the contraceptive regimen. If the patient has not adhered to the prescribed schedule, the possibility of pregnancy should be considered at the time of the first missed period, and further use of OCs should be withheld until pregnancy has been ruled out. If pregnancy is confirmed, the patient should be apprised of the potential risks to the fetus and the advisability of continuation of the pregnancy should be discussed in the light of these risks. It is also recommended that women who discontinue oral contraceptives with the intent of becoming pregnant use an alternate form of contraception for a period of time before attempting to conceive. Many clinicians recommend 3 months although no precise information is available on which to base this recommendation. The administration of progestogen-only or progestogen-estrogen combinations to induce withdrawal bleeding should not be used as a test of pregnancy. 6. *Gallbladder Disease:* Studies report an increased risk of surgically confirmed gallbladder disease in users of OCs and estrogens. In one study, an increased risk appeared after 2 years of use and doubled after 4 or 5 years of use. In one of the other studies, an increased risk was apparent between 6 and 12 months of use. 7. *Carbohydrate and Lipid Metabolic Effects:* A decrease in glucose tolerance has been observed in a significant percentage of patients on OCs. For this reason, prediabetic and diabetic patients should be carefully observed while receiving OCs. An increase in triglycerides and total phospholipids has been observed in patients receiving OCs. The clinical significance of this finding remains to be defined. 8. *Elevated Blood Pressure:* An increase in blood pressure has been reported in patients receiving OCs. In some women, hypertension may occur within a few months of beginning OC use. In the first year of use, the prevalence of women with hypertension is low in users and may be no higher than that of a comparable group of nonusers. The prevalence in users increases, however, with longer exposure, and in the fifth year of use is two and a half to three times the reported prevalence in the first year. Age is also strongly correlated with the development of hypertension in OC users. Women who previously have had hypertension during pregnancy may be more likely to develop elevation of blood pressure when given OCs. Hypertension that develops as a result of taking OCs usually returns to normal after discontinuing the drug. 9. *Headache:* The onset or exacerbation of migraine or development of headache of a new pattern which is recurrent, persistent, or severe, requires discontinuation of OCs and evaluation of the cause. 10. *Bleeding Irregularities:* Breakthrough bleeding, spotting and amenorrhea are frequent reasons for patients discontinuing OCs. In breakthrough bleeding, as in all cases of irregular bleeding from the vagina, nonfunctional causes should be borne in mind. In undiagnosed persistent or recurrent abnormal bleeding from the vagina, adequate diagnostic measures are indicated to rule out pregnancy or malignancy. If pathology has been excluded, time or a change to another formulation may solve the problem. Changing to an OC with a higher estrogen content, while potentially useful in minimizing menstrual irregularity, should be done only if necessary since this may increase the risk of thromboembolic disease. Women with a past history of oligomenorrhea or secondary amenorrhea or young women without regular cycles may have a tendency to remain anovulatory or to become amenorrheic after discontinuation of OCs. Women with these preexisting problems should be advised of this possibility and encouraged to use other contraceptive methods. Post-use anovulation, possibly prolonged, may also occur in women without previous irregularities. 11. *Ectopic Pregnancy:* Ectopic as well as intrauterine pregnancy may occur in contraceptive failures. However, in progestogen-only OC failures, the ratio of ectopic to intrauterine pregnancies is higher than in women who are not receiving OCs, since the drugs are more effective in preventing intrauterine than ectopic pregnancies. 12. *Breast-Feeding:* OCs given in the postpartum period may interfere with lactation. There may be a decrease in the quantity and quality of the breast milk. Furthermore, a small fraction of the hormonal agents in OCs has been identified in the milk of mothers receiving these drugs. The effects, if any, on the breast-fed child have not been determined. If feasible, the use of OCs should be deferred until the infant has been weaned. **PRECAUTIONS: General:** 1. A complete medical and family history should be taken prior to the initiation of OCs. The pretreatment and periodic physical examinations should include special reference to blood pressure, breasts, abdomen and pelvic organs, including Papanicolaou smear and relevant laboratory tests. As a general rule, OCs should not be prescribed for longer than 1 year without another physical examination being performed. 2. Under the influence of estrogen-progestogen preparations preexisting uterine leiomyomata may increase in size. 3. Patients with a history of psychic depression should be carefully observed and the drug discontinued if depression recurs to a serious degree. Patients becoming significantly depressed while taking OCs should stop the medication and use an alternate method of contraception in an attempt to determine whether the symptom is drug related. 4. OCs may cause some degree of fluid retention. They should be prescribed with caution, and only with careful monitoring, in patients with conditions which might be aggravated by fluid retention, such as convulsive disorders, migraine syndrome, asthma, or cardiac or renal insufficiency. 5. Patients with a past history of jaundice during pregnancy have an increased risk of recurrence of jaundice while receiving OC therapy. If jaundice develops in any patient receiving such drugs, the medication should be discontinued. 6. Steroid hormones may be poorly metabolized in patients with impaired liver function and should be administered with caution in such patients. 7. OC users may have disturbances in normal tryptophan metabolism which may result in a relative pyridoxine deficiency. The clinical significance of this is yet to be determined. 8. Serum folate levels may be depressed by OC therapy. Since the pregnant woman is predisposed to the development of folate deficiency and the incidence of folate deficiency increases with increasing gestation, it is possible that if a woman becomes pregnant shortly after stopping OCs, she may have a greater chance of developing folate deficiency and complications attributed to this deficiency. 9. The pathologist should be advised of OC therapy when relevant specimens are submitted. 10. Certain endocrine and liver function tests and blood components may be affected by estrogen-containing OCs: a. Increased sulfobromophthalein retention; b. Increased prothrombin and factors VII, VIII, IX, and X; decreased antithrombin 3; increased norepinephrine-induced platelet aggregability; c. Increased thyroid binding globulin (TBG) leading to increased circulating total thyroid hormone, as measured by protein-bound iodine (PBI), T4 by column, or T4 by radioimmunoassay. Free T3 resin uptake is decreased, reflecting the elevated TBG, free T4 concentration is unaltered; d. Decreased pregnanediol excretion; e. Reduced response to metyrapone test. **INFORMATION FOR THE PATIENT:** See Patient Labeling. **DRUG INTERACTIONS:** Reduced efficacy and increased incidence of breakthrough bleeding have been associated with concomitant use of rifampin. A similar association has been suggested with barbiturates, phenylbutazone, phenytoin sodium, tetracycline, and ampicillin. **CARCINOGENESIS, PREGNANCY, NURSING MOTHERS:** See Contraindications and Warnings sections. **ADVERSE REACTIONS:** An increased risk of the following serious adverse reactions has been associated with the use of OCs (see Warnings): Thrombophlebitis; pulmonary embolism; coronary thrombosis; cerebral thrombosis; cerebral hemorrhage; hypertension; gallbladder disease; benign hepatomas; congenital anomalies. There is evidence of an association between the following conditions and the use of OCs, although additional confirmatory studies are needed: Mesenteric thrombosis; neuro-ocular lesions, eg, retinal thrombosis and optic neuritis. The following adverse reactions have been reported in patients receiving OCs and are believed to be drug related: Nausea and/or vomiting, usually the most common adverse reactions, occur in approximately 10 percent or less of patients during the first cycle. Other reactions, as a general rule, are seen much less frequently or only occasionally: Gastrointestinal symptoms (such as abdominal cramps and bloating); breakthrough bleeding; spotting; change in menstrual flow; dysmenorrhea; amenorrhea during and after treatment; temporary infertility after discontinuance of treatment; edema; chloasma or melasma which may persist; breast changes: tenderness, enlargement and secretion; change in weight (increase or decrease); change in cervical erosion and cervical secretion; possible diminution in lactation when given immediately postpartum; cholestatic jaundice; migraine; increase in size of uterine leiomyomata; rash (allergic); mental depression; reduced tolerance to carbohydrates; vaginal candidiasis; change in corneal curvature (steepening); intolerance to contact lenses. The following adverse reactions have been reported in users of OCs, and the association has been neither confirmed nor refuted: Premenstrual-like syndrome; cataracts; changes in libido; chorea; changes in appetite; cystitis-like syndrome; headache; nervousness; dizziness; hirsutism; loss of scalp hair; erythema multiforme; erythema nodosum; hemorrhagic eruption; vaginitis; porphyria; hemolytic uremic syndrome. **ACUTE OVERDOSE:** Serious ill effects have not been reported following acute ingestion of large doses of OCs by young children. Overdosage may cause nausea, and withdrawal bleeding may occur in females. **HOW SUPPLIED:** Loestrin **21** 1/20 is available in dispensers each containing 21 tablets. Each tablet contains 1 mg of norethindrone acetate and 20 mcg of ethinyl estradiol. Available in packages of five dispensers. Loestrin **Fe** 1/20 is available in dispensers each containing 21 white tablets and 7 brown tablets. Each white tablet contains 1 mg of norethindrone acetate and 20 mcg of ethinyl estradiol. Each brown tablet contains 75 mg ferrous fumarate. Available in packages of five dispensers. Loestrin **21** 1.5/30 is available in dispensers each containing 21 tablets. Each tablet contains 1.5 mg of norethindrone acetate and 30 mcg of ethinyl estradiol. Available in packages of five dispensers. Loestrin **Fe** 1.5/30 is available in dispensers each containing 21 green tablets and 7 brown tablets. Each green tablet contains 1.5 mg of norethindrone acetate and 30 mcg of ethinyl estradiol. Each brown tablet contains 75 mg ferrous fumarate. Available in packages of five dispensers.

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Family Planning

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# UPDATE

## Quick About-Face on Abortion Drug

On October 28, 1988, the French government ordered Roussel-UCLAF to resume distribution of its early abortion drug mifepristone (also known as RU 486),[1] just days after Roussel had announced a permanent halt in distribution of the drug in France and China.[2] A month before, the two governments had approved mifepristone for sale under certain restrictions.[3] The drug was being provided in France by about 100 abortion centers, where it was administered in conjunction with a prostaglandin during the first seven weeks of pregnancy. The treatment had previously been shown to be about 95 percent effective. Roussel attributed its decision to withdraw the drug to boycott threats by abortion opponents in France. However, the company's decision set off vocal protests and threats of boycotts by obstetricians and gynecologists around the world,[4] and led the French government, which owns about one-third of Roussel's stock, to force the company to resume distribution.

[1] G. Kolata, "Any Sale in U.S. of Abortion Pill Still Years Away," *New York Times*, Oct. 30, 1988, p. A1; and M. Waldholz and T. Kamm, "Abortion Pill is Expected to Generate U.S. Black Market, More Controversy," *Wall Street Journal*, Oct. 31, 1988.

[2] S. Greenhouse, "Drug Maker Stops All Distribution of Abortion Pill," *New York Times*, Oct. 27, 1988, p. A1.

[3] G. Kolata, "France and China Allow Sale of a Drug for Early Abortion," *New York Times*, Sept. 24, 1988, p. 1.

[4] M. Simons, "Doctors Protest Company's Action on Abortion Pill," *New York Times*, Oct. 28, 1988, p. A1.

## Jury Slugs Searle

On September 9, a St. Paul, Minnesota, jury concluded that G.D. Searle had been negligent in its evaluation and marketing of the Copper-7 IUD, and awarded a plaintiff more than $8 million in damages, including $7 million in punitive damages.[1] The plaintiff, Esther R. Kociemba, had sued Searle because she had become infertile as a result of a pelvic infection that she claimed she had contracted while using a Copper-7. The company claimed that her infection was probably more closely related to her premarital sexual activity than to the IUD use. However, the jury appears to have been swayed by the company's own documents on the testing and marketing of the IUD, hundreds of which were introduced as evidence after four years of pretrial discovery. (Although Searle had won several previous cases alleging similar problems, this was the first case in which a plantiff's attorneys were able to introduce Searle's internal documents.) In its decision, the jury concluded that Searle had not properly tested the Copper-7, had failed to warn users about the risks associated with using the device and had misrepresented the device as appropriate for women who had never had children. A few days later, the presiding judge upheld most of the jury's original $8.75 million award, reducing only the jury's award for emotional distress (from $1 million to $400,000) because it exceeded the limit set by Minnesota.[2] Searle plans an appeal.

[1] J.F. Siler, "Drug Maker Told to Pay $8 Million Over Birth Device," *New York Times*, Sept. 10, 1988, p. 1.

[2] "Most of Award Upheld," *New York Times*, Sept. 15, 1988, p. D15.

## Kids Will Be Kids

By age 18, 43 percent of born-again teenagers have had sexual intercourse, according to a survey of sexual attitudes and practices among such youth.[1] (Nationally, one recent study has shown that 65 percent of males and 51 percent of females have engaged in intercourse by age 18.[2]) The survey, conducted in 1987 among 1,438 members of eight denominations, revealed that 65 percent had participated in some form of sex play—intercourse or the fondling of breasts or genitals—by age 18. Those who attended church irregularly, who were not active in church youth programs or who reported that the Bible was not important in their daily lives were substantially more likely than other born-again teenagers to have engaged in sexual intercourse.

[1] Josh McDowell Ministry, *Teen Sex Survey in the Evangelical Church*, Dallas, 1987.

[2] F.L. Mott and R.J. Haurin, "Linkages Between Sexual Activity and Alcohol and Drug Abuse Among American Adolescents," *Family Planning Perspectives*, **20**:128, 1988.

## AIDS Marches On

The World Health Organization (WHO) reports that as of August 31, 1988, 140 countries or territories have reported nearly 112,000 cases of AIDS.[1] More than 71,000 have been identified in the United States alone, and another 3,000 have been reported in Brazil and 1,800 in Canada; overall, the 81,000 cases reported in North and South America represent 72 percent of the world's total number of AIDS cases. Among all developing countries, Uganda has reported the most cases—4,006. Nearly 15,000 cases of AIDS, or 13 percent of the world total, have occurred in Africa; 54 percent of these cases were reported in 1987 alone. Overall, nearly 41,500 cases of AIDS were reported in 1987, a 66 percent increase over the number of cases reported in 1986. WHO now estimates that the actual worldwide total of AIDS cases may be at least 250,000–300,000, or about twice the number officially reported.

[1] World Health Organization, "Update: AIDS Cases Reported to Surveillance, Forecasting and Impact Assessment Unit," Geneva, Aug. 31, 1988.

## Teens Tell the Computer

Teenagers often hesitate to divulge details of their personal behavior to the staff of family planning or STD clinics. As a result, health professionals may be unable to gather accurate information on such sensitive subjects as sexual history, contraceptive use and experience with drugs. Now, however, a computer program—called the Teen Health Advisor—can help teenagers and health care workers overcome such problems.[1] Developed by David M. Paperny, the director of Kaiser Permanente's Adolescent Clinic in Honolulu, Hawaii, with funding from the March of Dimes, the program poses a series of confidential questions about sexual activity, contraceptive use and personal health, and is particularly oriented toward encouraging contraceptive use. In addition, it uses built-in validity checks to determine if the user is replying consistently. At the end of the session, the teenager receives a printout giving health advice and suggesting handouts relevant to his or her problems or concerns, as well as referrals for further health information. Paperny says that the computer program has collected more accurate information than can be obtained in a personal interview, in part because teenagers seem to like talking to computers; the clinic's staff have also found the program very helpful in gathering information on topics about which they were embarrassed to ask. Special game programs—the Baby Game, an attempt to help teenagers understand the real consequences of unexpected parenthood, and the Romance Game, a 40-minute sex education game—have also been developed.[2] The Teen Health Advisor program is available commercially for IBM, Tandy, Apple or Commodore computers; further information about the software can be obtained by calling Clinical Reference Systems at (303) 220-1661 or Medi-Sims at (913) 441-1868.

[1] J. Perrone, "Breaking Barriers: Computerized Teen Questionnaire Eases Discomfort with Sex Issues," *American Medical News*, June 17, 1988, p. 15.

[2] D.M. Paperny, personal communication, Sept. 1988.

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### Marriage=Happiness?

Married people are generally happier than never-married people—at least according to the results of various surveys over the years. However, a new analysis of accumulated national opinion data shows that the "happiness differential" between the married and the unmarried may be shrinking.[1] For example, among 25–39-year-olds, the proportion of never-married men who said they were very happy rose from 13 percent in 1972–1976 to 24 percent in 1982–1986, while the proportion of currently married men who reported being very happy fell from 34 percent to 30 percent. Comparable changes occurred among women: The proportion of never-married women who said that they were very happy rose from 14 percent to 24 percent, while the proportion among currently married women dropped from 43 percent to 37 percent. The investigators admit that they cannot determine whether it is marital status that affects happiness or personal happiness that influences the likelihood of marrying, but they suggest that it is time for social scientists to investigate whether the institution of marriage remains as strong as they have generally believed.

[1] N.D. Glenn and C.N. Weaver, "The Changing Relationship of Marital Status to Reported Happiness," *Journal of Marriage and the Family*, **50**:317, 1988.

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### Artificial Insemination Blues

Only about half of physicians who regularly perform artificial inseminations test sperm donors for genetic defects, and just one in five require testing of a donor who has a family history of genetic diseases or defects, according to a recent survey conducted by Congress's Office of Technology Assessment.[1] (In 1987, about 172,000 women had artificial inseminations, and 65,000 children were conceived through this process, about half of them with semen collected from anonymous donors.) A large majority of physicians who do the procedure say they would reject a potential donor if he were seropositive for HIV infection or were a homosexual or an intravenous drug user, but just 44 percent actually require donors to be tested for HIV infection or rely on sperm banks to conduct such tests. In addition, only 27–28 percent require donors to be tested for syphilis or gonorrhea. On the other hand, the vast majority of sperm banks included in the survey said that they screen anonymous donors for a variety of medical and genetic problems; all screen for HIV infection.

[1] Office of Technology Assessment, U.S. Congress, *Artificial Insemination: Practice in the United States. Summary of a 1987 Survey—Background Paper*, U.S. Government Printing Office, Washington, D.C., 1988.

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### A Shot in the Arm

A contraceptive vaccine developed by the World Health Organization's Special Programme of Research, Development and Research Training in Human Reproduction has shown great promise in an early human trial. The vaccine provokes an immune reaction against human chorionic gonadotropin (hCG), a hormone involved in the continuation of pregnancy, and thus prevents implantation. Thirty previously sterilized women received two injections of the vaccine over the course of six weeks. During the following six months, they experienced no serious adverse reactions and developed high levels of antibodies to hCG. Some women's antibody levels persisted long enough for the vaccine to provide protection against pregnancy for up to six months.

[1] W.R. Jones et al., "Phase I Clinical Trials of a World Health Organisation Birth Control Vaccine," *Lancet*, I:1295, 1988.

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### The Cervical Cap Arrives

Months after the FDA approved the cervical cap for general use in the United States, a U.S. distributor of the device has been selected—Cervical Cap Ltd., a small company operated by Liz Summerhayes, a California nurse-midwife.[1] Although Summerhayes has caps ready to be distributed, the organization of training programs remains the top priority. Cervical Cap Ltd. expects to develop a videotape with instructions for proper insertion of the device, as well as a fitting manual. The clinics and doctors around the country that provided caps under the FDA's investigational device exemption will be used as the basis for a network of training centers. In order to obtain a supply of cervical caps, prospective providers must first be trained in the how to properly fit the device; information about the availability of cervical cap training sessions in particular areas of the country can be obtained by calling (408) 358-6264.

[1] "Distributor Says Cervical Cap Won't Yet Be 'Generally Available,'" *Contraceptive Technology Update*, **9**:124, 1988.

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### C-Sections and Malpractice

Although the steady long-term rise in the use of cesarean section is well established, the reasons for it remain unclear. One hypothesis—that doctors fearful about the rise in malpractice lawsuits practice more defensive medicine—has received some quantitative support from a study of cesarean section rates in Illinois and Upstate New York.[1] Territories in each state where premiums for malpractice insurance were greatest had the highest primary cesarean section rates. The investigator concludes that obstetricians in these areas may be more likely to elect a cesarean section in order to protect themselves against the risk of a malpractice suit, and suggests that further research (especially on the relative influence of malpractice fears and maternal or infant health concerns) should be undertaken.

[1] S.M. Rock, "Malpractice Premiums and Primary Cesarean Section Rates in New York and Illinois," *Public Health Reports*, **103**:459, 1988.

# Fertility and Family Planning in the United States: Insights from the National Survey of Family Growth

*By William D. Mosher*

**Summary**

A review of about 50 studies based on the 1982 National Survey of Family Growth (NSFG) illustrates the ways in which the survey sheds new light on trends and differentials in such areas as fertility, contraceptive use, infertility and the use of family planning services in the United States. The total fertility rate declined by nearly 50 percent between 1960 and 1973, from 3.6 to 1.9 births per woman, and changed little from then until 1982. It would appear that growing use of the pill, the IUD and sterilization—but principally the pill—is the prime factor in the dramatic decline in unwanted and mistimed births among married couples. Their increasing reliance on sterilization between 1973 and 1982 reduced the proportion of unwanted births at ages 35 or older by half, but had little impact on overall birthrates because only about five percent of all births occurred at those ages in 1981.

Although overall fertility has declined, the rate of premarital pregnancy has risen since the early 1960s. Research based on the NSFG suggests that this is a result both of the rapid increase in the percentage of women who have premarital intercourse and of the increasing length of exposure to premarital pregnancy. The latter trend is probably related both to earlier intercourse and to delayed marriage. Despite the increasing levels of premarital exposure, however, there was actually a decline in teenage birthrates in the 1970s, which was due in part to the rising abortion rates among teenagers.

Finally, although racial differences in fertility have narrowed, black women still have higher fertility than whites. The 1982 NSFG data suggest that four factors are principally responsible for the higher birthrates of black women: Blacks begin having intercourse earlier than whites; black women are one-third less likely to use contraceptives at first intercourse; they are more likely to be currently exposed to the risk of unplanned pregnancy and not using a method; and they have higher pregnancy rates when they are using no contraceptives or less-effective methods, such as the condom, rhythm and withdrawal.

## Introduction

National fertility surveys have been conducted periodically in the United States since 1955. The first NSFG was conducted in 1973 by the National Center for Health Statistics in order to help explain trends and differentials in fertility, by collecting national data on factors affecting the birthrate and closely associated health variables. A second such survey was carried out in 1976, and a third NSFG was conducted in 1982. This series is being continued by the 1988 NSFG, which was fielded between January and August 1988.

The data in this article were obtained from the 1982 NSFG, which consisted of interviews with a national sample of about 8,000 women 15–44 years of age. The personal interviews were conducted in late 1982 and early 1983 by professional female interviewers, at the respondent's own home, and averaged about one hour in length. (The term "couples" is sometimes used in this article, but all data were obtained from women, including some data on characteristics of their husbands, if they were married.)

The total fertility rate (TFR) in the United States at the time of the first Growth of American Families Study in 1955 was about 3.6 births per woman. The rate declined by about 50 percent by the early 1970s, and since 1973 has remained below replacement level, at about 1.8 births per woman. Over this prolonged period of low fertility, several important issues have been those prompted by concern over too few pregnancies and over the need for optimal pregnancy outcome—including such topics as infertility, delayed childbearing, adoption, breastfeeding, cesarean section, genital herpes, AIDS and other health aspects of sexual activity—as well as those stemming from unplanned pregnancy, such as adolescent sexual activity and pregnancy. Many of them have a health dimension because they depend on access to the health care system. Thus, the survey's demographic and health uses are more closely linked than ever before.

Clearly, sources of data other than the NSFG—including the decennial census, the Current Population Survey (CPS), the vital statistics system and the National Longitudinal Survey of Youth, among others—have produced useful information on trends in and patterns of fertility, pregnancy, marriage, divorce and related variables. To review the contributions of all these sources would be impossible in one article of reasonable length. Instead, we follow the example of two previous review articles,[1] and explain the importance of many of the most significant findings from the 1982 NSFG. Thus, this article summarizes the results of about 50 published reports and articles derived from the 1982 NSFG and reviews their implications for research and policy.*

The framework for this discussion is the intermediate fertility variables, or proxi-

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*A complete list of reports based on the 1982 NSFG, including some not cited in this article, may be obtained from the author.

mate determinants of fertility.[2] Kingsley Davis and Judith Blake argued that "the process of reproduction involves three steps sufficiently obvious to be generally recognized in human culture"—intercourse, conception and gestation—and that "social factors influencing the level of fertility must operate" through these intermediate variables. For example, it is not enough to say that education affects fertility. Women with more education may have lower fertility than those with less education because they have first intercourse later, because they marry later or because they use contraceptives more effectively.

Therefore, our discussion is organized around these three events and, specifically, around the three groups of variables that represent them—intercourse variables (affecting the probability that intercourse will occur), conception variables (affecting the probability that intercourse will result in pregnancy) and gestation variables (affecting the probability that a pregnancy will be carried to term).

For several reasons, this article emphasizes differences between whites and blacks. First, black women have had substantially higher birthrates than have white women for as long as records have been kept, and these differences may have important demographic consequences. In addition, the black population of the United States has lower levels of income, education and life-expectancy than the white population. Because of these socioeconomic differences, black women are also disproportionate in their receipt of services from government-subsidized family planning and health programs. There is substantial sociological interest in explaining these differences, and great policy importance in responding to them. Analyses of the NSFG can be conducted in as much detail for black women as for white women because the survey sampled blacks at a higher rate than other groups.

Most of the black-white comparisons discussed in this article have not been adjusted for the very large socioeconomic differences between blacks and whites. (Where such an adjustment was made, it is mentioned in the text.) It is hoped that description of these differences will prompt others to conduct research that will help explain them.

## Intercourse Variables

The intercourse variables measure the exposure of women to sexual intercourse. They are important both as determinants of pregnancy rates and birthrates and as measures of the size of the population exposed to the risk of such sexually transmitted diseases (STDs) as gonorrhea, chlamydia, genital herpes, pelvic inflammatory disease and AIDS.[3] Intercourse variables measured in the NSFG are the timing of first intercourse, the proportion of women who have ever had intercourse, the amount of time spent in marriage or in cohabitation and the frequency of intercourse.

- *The timing of first intercourse.* This variable may be measured by the woman's age at first intercourse or by how long before her first marriage first intercourse took place. As shown below, by either measure, premarital exposure to the risk of pregnancy has increased substantially since the 1960s, and the amount of premarital exposure per woman has been consistently greater among blacks than among whites. The proportion of white teenagers who had ever had premarital intercourse rose rapidly between 1971 and 1979 (from 29 to 41 percent); between 1979 and 1982, however, the rise was slower, only to 43 percent. Among black teenagers, the increase between 1971 and 1979 was from 51 to 61 percent, but by 1982, this proportion had dropped to 57 percent. These patterns were unchanged after the introduction of controls for the effects of age.[4] Another study showed that in 1982, the age at first intercourse among Hispanic women was similar to that among white women. The marital status and education of a woman's parents are also associated with the timing of her first intercourse, with age at first intercourse being lower among women who have lived in a single-parent home and among those with less-educated parents. However, this analysis did not include multivariate controls.[5]

The timing of first intercourse can also be measured by how long before first marriage it occurred, which provides a direct measure of the duration of premarital exposure. Only 47 percent of white women who first married in 1960–1964 had had premarital intercourse, compared with 78 percent of white women married in 1975–1979. Among black women, 88 percent of those married in the early 1960s had had premarital intercourse, compared with 95 percent of those who married in the late 1970s. Perhaps more important is that the proportion of white women who had had intercourse three or more years before marriage increased sevenfold, from five percent in the early 1960s to 38 percent in the late 1970s. The proportion of black women with three or more years of premarital exposure rose from 30 percent among those married in 1960–1964 to 68 percent among those married in 1975–1979.[6]

In sum, the percentage of white women who had had premarital intercourse increased sharply in the 1960s and 1970s. The length of premarital exposure increased substantially after 1960 among both whites and blacks, and the length of premarital exposure for blacks was consistently longer than for whites or Hispanics.

- *Exposure to intercourse.* In the United States, women's exposure to sexual intercourse has been measured as lifetime exposure (the percentage who have *ever* had intercourse) and as current exposure (the percentage who have had intercourse recently). By age 25, over 95 percent of U.S. women have had intercourse at least once, and by the date of interview, the proportion is over 97 percent for both white women and black women.[7]

Current exposure to intercourse is sporadic, however, especially among unmarried women. Only 75 percent of unmarried women had had intercourse at least once in the three months preceding the interview, compared with 99.5 percent of married women.[8]

- *Frequency of intercourse.* NSFG data have shown that black women have intercourse less frequently than white women: The 1982 data show that 66 percent of white women aged 15–44 have intercourse once a week or more, compared with only 52 percent of black women. However, black women are less likely to be currently married than are white women; within categories of marital status, the difference, though remaining in the same direction, becomes insignificant.[9] These results are consistent with findings from the 1965 National Fertility Study, which showed a slightly lower average frequency of intercourse for black married couples than for white married couples.[10] According to the 1982 data, the percentage who were having intercourse once a week or more declined with increasing age among white married women, while among white unmarried women, this proportion is highest among those aged 25–34. Among blacks, there are no dramatic differences by age for either married or unmarried women.[11] A multivariate analysis of frequency of intercourse is needed that includes controls for factors besides age, race and marital status.
- *Marital dissolution.* According to the 1982 NSFG, the first marriages of black women are more likely to dissolve within five years than are those of white or Hispanic women. Black women are also substantially less likely than white or Hispanic women to remarry within five years of

divorce. Women who grow up in one-parent households, who marry as teenagers or who have less education are also more likely than other women to see their marriages dissolve within five years.[12] Although the analysis that produced these differences included no controls for social and economic variables, the results are consistent with those of previous research that did include controls.[13]

- *Cohabitation.* Census and CPS data on "persons of opposite sex sharing living quarters" have suggested that the number of cohabiting unmarried couples increased rapidly during the 1970s.[14] However, those data cannot prove this point, because they do not measure directly whether the "couple" had a sexual relationship; some consisted simply of a landlord and a tenant or an employer and a domestic worker. NSFG and CPS data agree that in 1982 there were about 1.6 million such couples, but the two surveys give divergent pictures of the couples' characteristics.[15] In 1982, these couples accounted for only three percent of all women and only six percent of unmarried women aged 15–44.

Cohabitants have attracted considerable popular attention because they openly violate traditional norms. Scholarly attention has focused on at least two questions: First, does cohabitation represent a temporary trial marriage, or is it a permanent substitute for marriage? Second, does cohabitation increase fertility by providing a marriage-like relationship in which intercourse is frequent, or does it decrease fertility by postponing legal marriage? Neither CPS nor census data can tell us much about the behavior of cohabiting couples, but data from the NSFG can. About four percent of unmarried black women, seven percent of unmarried whites and 16 percent of unmarried Hispanics were cohabiting in 1982. The peak ages for cohabitation were 25–29 (16 percent of unmarried women in this age-group were cohabiting) and 30–34 (11 percent).

A multivariate analysis of NSFG data on cohabitation shows that cohabiting women are more likely than other unmarried women to have intercourse frequently, to use an effective contraceptive method and to expect to have a baby within five years.[16] The study concluded that until we have a full history of cohabitation for each woman who has ever cohabited, we will not know for certain whether cohabitation increases or decreases fertility. However, it appears likely that the effect of cohabitation on overall fertility will be small as long as it involves a small percentage of women of reproductive age.*

## Conception Variables

The conception variables affect the probability that intercourse will result in pregnancy; the major such variables are the contraceptive methods couples choose, the effectiveness of each method, the incidence of fecundity impairments or infertility in the population and the prevalence of breastfeeding. Data on contraceptive use may help to explain fertility trends and differentials, but they also reveal important insights for the study of the family and sex roles and may have implications for the recommendations made by family planning service providers. (They are also interesting in their own right as social phenomena.)

- *Contraceptive use.* Analyses of the 1973 and 1976 NSFG data on contraception focused on use at the date of interview, but research on the 1982 data has been much broader. Indeed, the 1982 data, which include information on the methods used at various stages of a woman's life, provide a picture of the typical sequence of contraceptive use during a woman's reproductive life.

At first intercourse, the most popular method is the condom; among women who begin using a method after first intercourse, the most popular first method is the pill, and the longer a woman waits after first intercourse to begin using a method, the more likely she is to use the pill first.

According to the 1982 data, the pill was by far the most commonly used current method at the time of the interview among never-married women and teenagers. Among married couples who are delaying a birth, the most popular methods are the pill, the condom and the diaphragm (in that order). Female sterilization and male sterilization are the leading methods among currently married women who intend no more births; among all formerly married women, female sterilization and the pill are by far the most popular methods.[17]

Questions on the timing of first-method use were added to the 1982 NSFG. A detailed analysis of first premarital contraceptive use among women who had premarital intercourse between 1960 and 1982 revealed a number of striking trends and differences.[18] The 1982 NSFG showed that premarital contraceptive practice increased in the 1960s and 1970s, but not fast enough to offset the increase in premarital intercourse. The proportion of women using any method at first premarital intercourse increased from 39 percent in 1960–1964 to 48 percent in 1975–1979, largely because of increases in the use of both the pill and withdrawal. The leading methods at first intercourse were the condom, the pill and withdrawal. Between 1975–1979 and 1980–1982, however, the percentage who were using a method at first intercourse increased sharply, from 48 percent to 57 percent, because of increased reliance on the condom. Increased media attention to STDs such as genital herpes, gonorrhea and chlamydia may have led to an increase in the use of condoms at first intercourse. (This interpretation is consistent with an analysis that showed media coverage to have been closely associated with trends in pill and IUD use in the 1970s.[19])

A recent analysis of NSFG data shows the importance of contraceptive use: It estimated that if the proportion of women not practicing contraception were reduced by half and if the increase in contraceptive practice were spread proportionately among existing methods, one-third of all unintended pregnancies (including half a million induced abortions) would be prevented each year.[20]

Between 1965 and 1973, the proportion of married couples who were current users and relied on modern methods—the pill, the IUD and sterilization—increased from 38 percent to 69 percent; by 1973, the pill was used by 36 percent of married women who were using a method. The result of this dramatic shift toward more effective contraceptive use was a sharp reduction in unplanned births: In 1961–1965, 65 percent of births to married women were unplanned; by 1969–1973, only 37 percent were unplanned.[21]

Between 1973 and 1982, the proportion of married current users who relied on the more effective methods remained unchanged, at 68 percent, but the method mix again changed dramatically. The proportion who used the pill dropped by nearly half, from 36 to 20 percent, and female sterilization replaced the pill as the leading method among married couples. In 1965, only 18 percent of couples who did not intend to have any more children relied on either male or female sterilization; by 1982, this proportion had grown to 61 percent.[22] The most notable consequence of the increase in sterilization between 1973 and 1982 was that the proportion of recent unwanted births to married women aged 35–44 was cut in half, from 34 percent in 1973 to 16 percent in 1982.[23]

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*If the proportion of unmarried women who are cohabiting levels off, the number of couples cohabiting should decline in the 1990s as the baby-boom generation (those born between 1946 and 1964) becomes middle-aged and the smaller baby-bust cohorts (those born between 1965 and 1979) reach their 20s and 30s.

The decline in pill use and the increase in sterilization among married couples between 1973 and 1982 did not result entirely from direct switching from the pill to sterilization. According to NSFG data, only about 20 percent of former pill users switched directly to sterilization; by the date of interview, however, 30 percent of former pill users relied on sterilization. Many women have periods of contraceptive nonuse after quitting the pill. About 23 percent of white former pill users and 50 percent of black former users were exposed to the risk of unintended pregnancy for one or more months after stopping pill use. Finally, nearly 100 percent of former pill users cited at least one physical problem or side effect as a reason why they quit using the method. The most commonly reported side effects were headaches, menstrual abnormalities and high blood pressure.[24]

Why has sterilization—especially female sterilization—become so popular? By age 30, three-quarters of ever-married women have had all the births they want, and almost one-quarter of all white married couples had sterilization operations within a year of their last wanted birth.[25] In a typical couple who became sterilized, the wife was about 30 years of age and had 2 or 3 children.[26] Since they had 10–15 years of fecund life remaining and had already had all the children they wanted, these couples needed a method that was safe and very effective. However, as a result of adverse publicity about the health risks of the IUD and the undesirability of pill use for women over 35 and those who smoke, these methods must have seemed unattractive choices to many couples. Nonetheless, the widespread use of the pill has led most women to want a method that was both effective and nonintrusive. In addition, surgical techniques used in female sterilization became markedly easier and safer in the 1970s and 1980s; laparoscopic sterilization became an outpatient procedure, and a growing number of physicians were trained to perform it. Finally, insurance coverage of sterilization may have become more common in the 1970s.

About 51 percent of white non-Hispanic women used a method at first premarital intercourse, compared with only 34 percent of black women. Much of this difference was due to the fact that 13 percent of white women and their partners use withdrawal, compared with only three percent of blacks. Much of the rest of the difference is because of the larger proportion of whites who use the condom. Black women were significantly more likely than whites to have delayed first method use for a year or more after first intercourse;[27] black women also use a smaller number of different contraceptive methods. Blacks are especially less likely than whites to report having ever used such coitus-dependent methods as the diaphragm (10 percent vs. 19 percent), the condom (40 percent vs. 54 percent), rhythm (nine percent vs. 20 percent) and withdrawal (14 percent vs. 26 percent). Interestingly, black women are about as likely as whites to have ever used the pill (76 percent each), and they are more likely to have relied on douching for birth control at some point.[28]

Since at least 1965, married blacks who elect sterilization have been much less likely than married whites to choose male sterilization over female sterilization. One study found that in 1982, for example, in 40 percent of contraceptively sterilized white couples, the husband had been sterilized, compared with only nine percent of comparable black couples.[29] Investigators who conducted a detailed multivariate analysis of racial differences in contraceptive use suggested that "black women may accept more responsibility for contraceptive choice and use than whites, partially in response to indifference or hostility toward contraceptives by black men. The pattern of primary contraceptive responsibility falling to black women is indicated by the relatively small proportion of black men who are contraceptively sterilized or [who] use condoms. Thus, black women must rely more heavily on female methods of contraception."[30]

Such speculation points to sex-role norms as an explanation of racial differences in contraceptive choice, but racial differences in health care utilization patterns and in the community-level economic environment should also be investigated as potential explanations of racial differences in contraceptive choice. Blacks are more likely than whites to be exposed to the risk of pregnancy while not using a method, and they have a higher pregnancy rate during nonuse than do white women.[31] Black women also have higher rates of unintended pregnancy while using the condom, rhythm or withdrawal.[32]

Educational differentials (as measured by the education of the respondent or by the education of her mother) reveal substantial socioeconomic differences in contraceptive use at all stages of the reproductive life cycle. The 1982 data show that women with college-educated mothers were much more likely to have used a contraceptive method at first intercourse (54 percent) than were those with mothers who did not finish high school (37 percent). After multivariate adjustment for race and other variables, this difference was reduced but was still significant.[33]

A woman's *own* level of education is also associated with her choice of sterilization. In comparing married women who have not finished high school with those who have attended college, one study found that only 22 percent of those in the lowest education group who are protected by sterilization have husbands who are sterilized, compared with 40 percent of those in the highest education group.[34] This suggests that the higher a woman's status, the more likely it is that her husband will share the risks and effort that sterilization requires. (An earlier study showed that this effect held both for white and for black couples.[35])

The higher the woman's education, the more likely she is to have ever used the diaphragm, the condom, foam, rhythm or withdrawal. Among married couples, current use of the diaphragm is rare (three percent or less) except among college-educated women (12 percent). Again, this suggests that the higher a woman's status, the more likely she and her partner will be to accept the inconvenience of coitus-dependent methods, particularly the diaphragm. Higher status women may also be more concerned about the health effects of the pill and the IUD and may thus be more willing to accept the inconvenience of the diaphragm.

One study showed that the large differences in fertility and family size between Protestant and Catholic couples in the 1950s and 1960s were a result of their sharply different contraceptive practices.[36] In 1955, 32 percent of white Catholic couples were able to conceive and were not trying to get pregnant, yet were not practicing contraception, compared with only 19 percent of Protestants. Furthermore, *half* of Catholic contraceptive users in 1955 relied on rhythm, compared with just 13 percent of Protestant users. Through the 1970s, contraceptive practice among Catholics and Protestants became much more similar, and much more effective, but differences remained. For example, by 1982, the proportions of white Protestant and white Catholic married couples relying on sterilization, the pill, the condom or rhythm all remained significantly different. In 1982, Jewish women were much more likely than Protestant or Catholic women to use the diaphragm or IUD and were less likely to use the pill or rhythm, while those with no religious affiliation were much more likely than Protestants or Catholics to use the diaphragm and less likely to use rhythm.

The authors of the study concluded that pressures on all societal groups to keep birthrates low may result in similar small family-size goals in all religious groups, but that these groups may differ substantially in the contraceptive paths they choose to attain their goals. Communication patterns, norms about sex roles and norms about the intermediate variables differ between these groups, so examining how these patterns differ among religious groups may yield important insights regarding their effects on contraceptive choice.

- *Contraceptive effectiveness.* Data on failure rates of various contraceptive methods may be useful both for women deciding which method to use and for medical personnel deciding which method to recommend; NSFG data have often been used to calculate such rates. Studies based on pre-1982 data reported one-year use-failure rates only for married women, however, because data on all unmarried women were not available from the 1973 or 1976 surveys.[37]

A recent study of the 1982 NSFG used a log-linear hazards modeling technique to show the probability of unintended pregnancy for both married and unmarried women in their first year of method use.[38] The failure rates were controlled for age, fertility intention, parity and income, and were adjusted for underreporting of abortion; they are shown in Table 1.

As can be seen in Table 1, the failure rate among single women for the pill (5.7 percent) is as high as the rate for the IUD (5.4). The investigators speculate that single women may be more prone to skip the pill occasionally because their exposure to intercourse is more likely to be irregular. The apparent result is that single women using the pill have more unintended pregnancies than married women using the pill. Furthermore, especially for single women, the failure rate for the condom is lower than that for the diaphragm (10.8 percent vs. 23.3 percent). It is likely that the failure rate for the diaphragm is high because not all women use it at every act of intercourse.

The NSFG data indicate that in 1982, about 2.2 million women were using an IUD. In 1985 and 1986, the two companies that manufactured most IUDs used in the United States stopped distributing them because of the financial risks of lawsuits by former IUD users and the high cost of liability insurance to meet these lawsuits.[39] Another IUD was introduced in 1988, but its use will be limited to women at low risk of developing pelvic inflammatory disease (PID).[40] As a result, over the last few years, a woman who wanted a reversible method with a failure rate under 10 percent had no choice but the pill.

Who were the women using the IUD in 1982, and what were they likely to use after the IUD? One study used NSFG data to estimate that half of the women using the device in 1982 were not good candidates for the pill because they were too old or because they smoked, and many of the remainder were not good candidates for sterilization because they wanted another baby. Data also showed that Hispanics were disproportionate users of the IUD.[41] Data from the 1988 NSFG will enable us to determine how many unintended pregnancies resulted from discontinuation of IUD use, as well as the methods now used by those who had relied on the IUD.

- *Impaired fecundity.* The NSFG has used two principal measures of fecundity impairment (conditions that make it physically difficult or impossible for a woman or couple to have a baby)—impaired fecundity and infertility.[42] They differ in two principal ways: Infertility is a measure only of a couple's difficulty in conceiving, while impaired fecundity is a measure of both a difficulty in conceiving and a problem with or danger in carrying a pregnancy to term. Infertility was measured in the NSFG only for married couples, because the measure assumes continuous exposure to intercourse and no underreporting of abortion, which is true only of currently married women; impaired fecundity could be determined both for married couples and for unmarried women.

The concept of infertility, defined as an inability to conceive after one or more years of unprotected intercourse, is used by physicians as a screening device to decide when couples should begin to receive treatment; it is not a measure of sterility.[43] In 1982, about 2.4 million married couples were infertile. They constituted 8.5 percent (or about one in 12) of the 28.2 million married couples in which the wife was 15–44 years of age. Physicians often distinguish between "primary" and "secondary" infertility: Primary infertility affects a woman who has had no live births (i.e., she is having difficulty in conceiving her first child); secondary infertility affects a woman who has already had one or more births (i.e., she is having difficulty conceiving a second or later child). Of the 2.4 million infertile married couples in the United States, 1.0 million have primary infertility and 1.4 million have secondary infertility.

**Table 1. Percentage* of women who had an unplanned pregnancy within the first year of contraceptive use, by method, according to marital status, 1982**

| Method | Married | Single |
|---|---|---|
| Pill | 2.9 | 5.7 |
| IUD | 6.0 | 5.4 |
| Condom | 14.1 | 10.8 |
| Rhythm | 16.1 | 23.0 |
| Diaphragm | 17.2 | 23.3 |
| Spermicides | 22.1 | 19.4 |
| Other | 21.9 | 15.4 |

*Standardized for age, fertility intention, race, parity and income, and adjusted for the underreporting of abortion.

Source: See reference 35, Tables 2 and 4.

As was noted above, impaired fecundity is a measure that includes unmarried women as well as married couples and involves difficulty in carrying a pregnancy to term as well as difficulty in conceiving. About 4.5 million women (or their husbands, if these women were married) had impaired fecundity in 1982; they represented about 8.4 percent of the 54.1 million women aged 15–44 in that year. Of this total, 1.9 million women were childless and the other 2.6 million had had one or more children.[44]

A third set of estimates, also derived from the NSFG but based on different definitions and criteria, suggest that about 2.4 million women (or couples) in the United States in 1982 were "in need of infertility services," in the sense that they wanted to have a baby and had fecundity impairments that were "possibly treatable."[45] These three sets of estimates are in marked contrast to accounts in the popular media, many of which have inaccurately suggested that the number of couples with infertility problems is much higher.

We can only study trends in impaired fecundity from 1976 to 1982. These show no significant increase.[46] Trends in infertility can be studied from 1965 to 1982 among married couples with wives aged 15–44, using the 1965 National Fertility Study and the 1976 and 1982 NSFG. The results are complex. Surgically sterile couples are, of course, not exposed to the risk of discovering infertility because they quite logically attribute their inability to conceive to the sterilization operation. In 1965, the proportion of couples in which one or the other member had been sterilized was only 16 percent, but by 1982, this proportion had soared to 39 percent. The proportion sterilized in 1982 increased sharply with age, from eight percent of couples with

**Table 2. Percentage of nonsterilized women who were infertile or whose fecundity was impaired, by marital status, according to age, 1982**

| Status | Age 15–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 |
|---|---|---|---|---|---|---|
| **All women** | | | | | | |
| Impaired fecundity | 2 | 7 | 13 | 15 | 28 | 28 |
| **Married** | | | | | | |
| Infertile | 2 | 11 | 9 | 14 | 25 | 27 |
| Impaired fecundity | 6 | 10 | 12 | 17 | 34 | 35 |

wives 20–24 to 67 percent with wives 40–44. If we are to compare levels of infertility over time or between age-groups, surgically sterile couples must be removed. However, after such removal, results showed that the percentage infertile did not change significantly between 1965 and 1982, except among 20–24-year-olds.

The number of infertile couples actually declined between 1965 and 1982, from 3.0 to 2.4 million, but this decline masked two different trends: The number with primary infertility rose from 0.5 million in 1965 to nearly 1.0 million in 1976 and to 1.0 million in 1982; in contrast, the number with secondary infertility declined steadily from 2.5 to 1.4 million between 1965 and 1982, probably because the increases in surgical sterilization prevented the discovery of secondary infertility.[47]

Thus, increased popular concern over infertility is not a result of any recent dramatic increases in the incidence or prevalence of infertility. Instead, it may be related to a number of other social and medical changes. For example, a variety of new drugs and techniques for treating infertility have become available in the last decade, including drugs to induce ovulation and surgical techniques to repair and reopen damaged fallopian tubes. The media have publicized the availability of these new techniques, making more couples aware that infertility is often treatable. While "new reproductive technologies" such as artificial insemination, in vitro fertilization, embryo transfer and surrogate motherhood do not yet produce a demographically significant number of births, they have received widespread publicity. This publicity may have increased public awareness of infertility, but it has not increased its incidence.[48]

Another factor undoubtedly is the substantial increase since the early 1970s in the number of physicians trained in reproductive endocrinology and infertility.[49] The number of office visits for infertility has also increased,[50] and this would likely lead physicians to perceive that infertility is increasing, because they spend more of their time treating it. In addition, the baby boom cohort, 18–36 years of age in 1982 and 24–42 in 1988, has been delaying marriage and childbearing, which has compressed the period of intended childbearing into a shorter number of years, thus putting more pressure on couples to conceive quickly.[51] Finally, a related phenomenon is the perception that if a couple can "turn off" fertility at will through effective contraception, they should also be able to "turn it on" at will.[52] Clearly, this is not the case, but a generation of women have become accustomed to the effectiveness of the pill, and for nearly two decades, efforts have been made to persuade unmarried women and teenagers that they can get pregnant at any time if they do not use contraceptives. In sum, increased use of medical treatment and public discussion of infertility has brought the subject more into the open, but that does not imply that infertility is occurring at epidemic rates, or even that it is increasing rapidly.

The relationship between infertility and age is a matter of intense concern to women who are delaying childbearing. The data shown in Table 2 indicate the percentages of nonsterilized women (or couples) who had difficulty in conceiving or carrying a pregnancy to term. (Many of these conditions are treatable; they are not measures of sterility.) In all three cases, we can see a similar pattern: The proportion infertile (or with fecundity impairments) increases moderately until age 30–34 and then rises sharply after age 35.[53] These conclusions are qualitatively similar to inferences based on historical data using very different measures.[54] It is worth noting that 93 percent of all births and 97 percent of first births occur to women under 35,[55] so the sharpest rise in fecundity impairments (after age 35) probably affects a relatively small proportion of the women who want more children.

Visits to private physicians' offices for diagnosis and treatment of infertility increased from about one million in 1981 to 1.6 million in 1984.[56] In 1982, about 6.6 million women had ever used infertility services; white women were more likely than blacks or Hispanics to have done so. The most common such services they received were advice on the timing of intercourse, advice to make changes in lifestyle or health habits, prescriptions for drugs to induce ovulation and performance of infertility tests.[57]

Women with primary infertility are about twice as likely to seek services as are women with secondary infertility. Those with secondary infertility who receive infertility services are more likely than women who have not received services to be white, to be college-educated, to have high incomes, to have been treated for PID and to have ever used the pill.[58] Thus, women or couples who receive services for infertility, especially for secondary infertility, are disproportionately high-status women.[59] This may account for the perception that infertility is increasingly common among high-status women, whereas the data show that infertility is most common among blacks and among less-educated women.

The pill and the IUD are often suggested as possible causes of the perceived increase in infertility. In a multivariate study of the complex relationships among contraceptive choice, PID and fecundity impairments, the investigators found that after they controlled for the effects of contraceptive choice, parity and age, PID was strongly related to fecundity problems.[60] However, introduction of controls for PID, age and parity showed that women who had used the IUD were significantly less likely to have fecundity problems (17 percent) than were women who had used the pill but not the IUD (26 percent), and were much less likely than women who had never used any method (42 percent).

These results are consistent with epidemiologic evidence that pill use is associated with a lower risk of PID and infertility than is use of no contraceptive. They also suggest that many nonusers do not use contraceptives because they have fecundity problems, and thus are not a good control group. These findings are also consistent with the hypothesis that the IUD is prescribed only for women with proven fertility, while the pill is often given to women who have never been pregnant or have had PID or fertility problems.

PID is surprisingly common in the United States. About one in seven women reported in the NSFG that they had been treated for it, and NSFG data on PID are consistent with other data from physicians and hospitals. PID is about twice as common among black women (23 percent) as among white women (13 percent). This difference is found in each age-group and at each marital status (socioeconomic status was not controlled for).[61]

The incidence of cesarean delivery also has had an impact on women's fecundity. In 1965, fewer than five percent of births in the United States were delivered by cesarean section; by 1984, this proportion had increased to 21 percent, and was projected to rise to 40 percent by the year 2000.[62] One recent study examined the demographic implications of this trend.[63] Women in the 1982 NSFG who had had their first birth by cesarean section were compared with women who had delivered their first birth vaginally; controls for parity, age at birth, marital status at birth, race and year of birth were introduced by means of matching, and controls for other variables were performed by logistic regression. When the effects of other variables were controlled for, women with cesarean sections were found to have somewhat lower subsequent fertility, report more fecundity impairments and have a higher proportion of sterilization operations than women who deliver vaginally. Their lower fertility is due to these physical problems, not to any lessened desire for children. These results suggest that the trend toward cesarean section will tend to reduce fertility rates slightly in the United States in coming years; this effect should increase if cesarean delivery becomes more common.

• *Breastfeeding*. Fertility surveys originally collected data on breastfeeding because it prolongs the period of postpartum amenorrhea. Compared with that of contraception and abortion, its demographic impact is very small in the United States; however, breastfeeding is important for infant health because it "provides a complete and highly desirable total diet for the infant until five or six months of age."[64] Breast milk also contains antibodies that appear to protect the infant from gastrointestinal, respiratory, ear and other infections.[65]

We would expect that breastfeeding would do the most good for infants in low-status populations where nutrition, living conditions and health care are least adequate. Unfortunately, NSFG data demonstrate that those infants with the most to gain from breastfeeding are the least likely to be breastfed. Overall, 57 percent of white babies were breastfed at all in 1980–1981, compared with only 25 percent of black babies. It is not clear, however, how much, if any, of the white-black differences are artifacts of variations in educational attainment or other social or economic factors. The multivariate analysis necessary to answer that question has not been done.

In 1980–1981, 73 percent of the babies of college-educated mothers were breastfed, compared with only 32 percent of babies born to women who did not complete high school.[66] The trend in breastfeeding over time, however, was found to be upward across all regions and maternal education groups, as well as among both blacks and whites: The proportion of babies breastfed at all doubled from 24 percent in 1970–1973 to 53 percent in 1980–1981.

Longer term breastfeeding was even less common. Only 36 percent of white and 12 percent of black babies were breastfed for three months or more in 1980–1981. Fifty-one percent of the babies of college-educated mothers were breastfed for three months or more, compared with only 26 percent of the babies of high school graduates. Thus, in the 1980s, long-term breastfeeding was common only among white college-educated mothers. The babies who most needed its benefits were least likely to get them.

### Gestation Variables

The variables related to gestation are those associated with the principal pregnancy outcomes—miscarriage, stillbirth, induced abortion and live birth.

• *Pregnancy losses*. In the NSFG data, miscarriages and stillbirths are combined and classified as pregnancy losses. The NSFG data on pregnancy losses compare well with other survey data.[67] Like other data sources, NSFG data show that when rates of pregnancy loss are expressed as miscarriages plus stillbirths divided by live births plus this total, the result is that about one in six pregnancies known to the women without special means of detection end in a miscarriage or a stillbirth. (Of course, this proportion is higher when special detection techniques are used.)[68]

The proportion of pregnancies ending in miscarriage or stillbirth is higher for pregnancies occurring at or above age 35, for third or higher order pregnancies and for those among women who have been treated for PID.[69]

Unfortunately, induced abortions were seriously underreported in the 1982 NSFG: They were reported completely by married white women, but inadequately by unmarried whites and by blacks.[70] As a result, pregnancy rates estimated from NSFG data alone are too low.

However, three researchers combined data on live births from the birth registration system with induced abortion data from the U.S. Centers for Disease Control and The Alan Guttmacher Institute and with NSFG data on pregnancy loss to estimate the number of pregnancies and pregnancy rates, by age and race, in the United States between 1976 and 1983.[71] For example, it is estimated that in 1983, there were nearly six million pregnancies in the United States—one million more than in 1976. The 1983 total included 3.6 million births, 1.6 million induced abortions and 0.8 million pregnancy losses. The general fertility rate in 1983 was 66 births per 1,000 women, but the analogous pregnancy rate was 108 per 1,000. The pregnancy rate for blacks and nonwhites of "other" races was 164 per 1,000, two-thirds higher than the rate of 97 per 1,000 among whites. Estimates for 1981 and 1982 were very similar.

• *Live births*. Classifying births as unwanted, mistimed or intended helps to illuminate the forces producing fertility trends and differentials. An unwanted birth (or pregnancy) is one that the woman, at the time it was conceived, did not want ever; a mistimed birth is one that occurred too soon. The sum of unwanted and mistimed births is referred to as "unplanned" or "unintended" births.

The fertility surveys conducted in the United States over the past few decades have documented the substantial progress made since the 1960s in reducing unwanted and mistimed marital births. In 1961–1965, 65 percent of births to married women were unintended—45 percent mistimed and 20 percent unwanted. By 1969–1973, however, the proportion of mistimed births had dropped by nearly half, from 45 percent to 24 percent, probably because of the increasing use of the pill and the IUD among married couples through 1973.[72] The proportion of recent unwanted marital births dropped to seven percent by 1982, probably as a result of the increasing use of sterilization by married couples and the legalization of abortion. The proportion of recent unwanted marital births remained higher among blacks than among whites in 1982 (12 percent vs. six percent), but the difference was much smaller than in 1965 (41 vs. 18 percent).

However, women are spending an increasing proportion of their reproductive years outside of marriage. Births to never-married women are often unplanned: The 1982 survey showed that 67 percent of births to never-married women were unwanted or mistimed, and only 21 percent of never-married women had deliberately conceived by stopping or not practicing contraception.[73][*]

Fertility surveys conducted in 1955 and 1960 found very large differentials in fertility between white Protestant couples and white Catholic couples. Indeed, by the early 1960s, the marital fertility of white Catholics was 35 percent higher than that of white non-Catholics.[74] By the early 1970s, that difference had shrunk to less than 10 percent, and by 1977–1981, there was no difference (once Hispanics were excluded) in marital fertility between Catholics and non-Catholics. Thus, after exclusion of Hispanics, the prediction that Catholic and non-Catholic marital fertility would converge by the early 1980s has proved accurate.[75]

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[*] One study using NSFG and other data estimated that 54 percent of all pregnancies in the United States in 1982 were unintended—26 percent ended in abortions, 22 percent in unintended live births and six percent in unintended pregnancy losses. (See J.D. Forrest, "Unintended Pregnancy Among American Women," *Family Planning Perspectives*, **19**:76, 1987.)

However, Catholic women are also more likely than Protestant women to remain unmarried. Therefore, the TFR for white non-Hispanic Catholic women in 1977–1981 was actually lower than that for white non-Catholics (1.67 vs. 1.84 lifetime births per woman). This finding is confirmed by analyses of data on children ever born. The authors conclude that the present fertility, marriage and contraceptive patterns of white non-Hispanic Catholics, and several current theories about fertility differentials, suggest that fertility among such women will "remain as low [as] or lower than that of white non-Catholics, at least in the next 10–20 years," and that future analyses of religion and fertility must take both Hispanic origin and marital status into account.[76]

## Other Fertility-Related Variables

Research on the NSFG data has also focused on policy issues related to fertility. These areas are not part of the intermediate fertility variables framework, but their effects are certainly felt through the intermediate variables. These special topics, discussed below, are adolescent pregnancy, the use of family planning services and the health aspects of pregnancy and birth.

- *Adolescent pregnancy.* Data from fertility surveys, including the NSFG, have shed considerable light on the problem of teenage pregnancy and such related topics as sex education and adoption. The pregnancy rate among U.S. teenagers in 1983 was 109 per 1,000 women aged 15–19 (94 per 1,000 among white women and 178 per 1,000 among blacks and women of other races).[77] A recent comparative study found that the United States has the highest rate of teenage pregnancy of any industrialized country; the reason, according to the authors, is that U.S. teenagers are less likely to practice contraception and, when they do, are likely to practice it less effectively than do European teenagers.[78] Recently, a study using NSFG data showed that teenagers have one-third of all the unintended pregnancies in the United States (32 percent), and that three-quarters of those occur among teenagers who are not using any method of contraception.[79] These results suggest that substantial progress against adolescent pregnancy is possible, even with existing contraceptive methods, if early use is increased substantially.

Are teenage pregnancy rates rising? One study showed that the pregnancy rate per 1,000 15–19-year-olds rose 25 percent between 1970 and 1984; however, the pregnancy rate per 1,000 sexually active teenagers fell by 11 percent over that period. These changes are consistent with NSFG data showing large increases in premarital sexual activity and more modest increases in premarital contraceptive use.[80]

NSFG data on differentials in contraceptive use at first premarital intercourse are useful in explaining group differences in teenage pregnancy, premarital pregnancy and the risk of out-of-wedlock birth or abortion. The proportion of women (or their partners) who use a method at their first premarital intercourse is 74 percent among Jewish women, 51 percent among other whites, just 34 percent among blacks and only 22 percent among Hispanics—a range of over 50 percentage points. A multivariate adjustment for age at first intercourse, education of the young woman's mother and three other variables does not change this pattern.[81]

Why are teenage pregnancy rates among blacks and Hispanics higher than rates among whites? The rate among white teenagers 15–19 years of age was 97 per 1,000 in 1983; for blacks and other women, the rate was 164 per 1,000.[82] Pregnancy rates for Hispanic teenagers are not available, but in 1980, birthrates for Hispanic teenagers were twice as high as those for non-Hispanic whites (82 per 1,000 and 41 per 1,000, respectively).[83] As we have shown, black women have first intercourse at younger ages, and blacks and Hispanics are much less likely than whites to practice contraception at first intercourse.[84] The small proportion of Hispanics using a method is one reason why 26 percent of Hispanic births occur among unmarried women, compared with only 10 percent of births among non-Hispanic whites.[85] The large proportion of out-of-wedlock births among black women is clearly related to the small proportion of blacks who use a method at first intercourse; other important factors probably are their earlier age at first intercourse, later marriage and longer period of premarital sexual activity.[86]

Why is the rate of teenage pregnancy so high despite the availability of family planning services? A recent study sheds some light on this question: Only 17 percent of young women aged 15–24 make their first family planning visit before first intercourse, and only another 10 percent make their visit in the same month as first intercourse; for the remaining 73 percent of young women, a life-table analysis shows that the median delay between first intercourse and first family planning visit is 23 months.[87] This delay is clearly a major reason why the United States has a higher rate of adolescent pregnancy and a lower rate of teenage contraceptive use than any other industrialized country.

The NSFG analysis shows that the most commonly utilized service at the first family planning visit of women aged 15–24 is birth control counseling (by 67 percent of those who had at least one visit). (One study, noting the importance of birth control counseling, found that young women learn about contraception primarily through visits to clinics or doctors, not at home or in school.[88]) Only 50 percent of young women begin a method of birth control at the first visit.

Sex education generally includes formal instruction on how pregnancy occurs or on how birth control methods are used. One study shows that teenagers who receive sex education know how to use more contraceptive methods, are more likely to talk to their parents about pregnancy or contraception and are more likely to practice contraception at first intercourse than are teenagers who do not receive it.[89] However, sex education has no independent effect on the probability of premarital intercourse, premarital pregnancy or current contraceptive use. These findings are generally consistent with those of other studies, although the study points out that the NSFG questions do not include information on the amount, quality or specific content of the instruction, including the biases or points of view presented, the objectives of the course or instructor, whether the course is elective or required, or the exact timing of the instruction. Measures of the amount of instruction received and the timing of the instruction may be useful additions to future surveys.

Adoption is an alternative means of family formation that has received considerable attention from the popular press in recent years, perhaps because of the widespread perception that it has become increasingly difficult to adopt a baby. In recent years, the NSFG has been the only national source of data on both public-sector and private-sector adoptions. Data on adoption are scarce. We do not know how many children are placed for adoption each year, how many are actually adopted or how many people want to adopt.

Nevertheless, an analysis of the 1982 NSFG data reveals a number of noteworthy findings on the extent, determinants and consequences of adoption.[90] Data from the 1973 and 1982 NSFG surveys are consistent with the hypothesis that the total number of adoptions may have increased between 1975 and 1982, as the number of out-of-wedlock births increased. However, the sample size of the surveys is too small for reliable estimates to be made of the annual number of adoptions. According to the 1982 data, the typical adopting mother is white, married, childless, sterile or subfecund and about 29 years of age at the time of the adoption. Adopted children have better educated parents and higher family incomes than babies who are kept by their unwed biological mothers. Mothers who place babies for adoption also are of higher socioeconomic status than are those who keep their babies, but this difference may be related to their initially higher status and higher aspirations for themselves. The new data from the 1988 NSFG, including new data on demand for adoption, will increase our knowledge of this alternative means of family formation.

- *Family planning services.* Sterilization, the pill and, until recently, the IUD have reduced the occurrence of unplanned pregnancy in the United States; together, these methods accounted for 69 percent of contraceptive use in 1982. However, they must be obtained from a physician. Thus, the connection between contraception and the health care system is much stronger than it was in the 1950s, before the pill and the IUD were introduced and techniques of sterilization improved. As the cost of having and raising children rises, and as the connection between contraception and the health care system grows stronger, it is increasingly important for poor women and those without insurance to have access to effective contraceptive methods when they want them, and for researchers trying to understand fertility and contraceptive patterns to know where and how contraceptives are obtained.

Some data on the use of family planning services are available from the 1973 and 1976 surveys, but they were limited to the most recent family planning visit by ever-married women, and were based on a single question that underestimated the proportion of women who used family planning services. In 1982, a detailed series of questions on family planning services replaced the old single question; the resulting data are rich and have been analyzed extensively.[91]

Questions were asked in 1982 to determine whether women receive their family planning services from a private doctor, private group practice or health maintenance organization (all classified as a "private doctor"), from a clinic* or from a nonmedical counselor. One recent study shows that 50 percent of first visits and 30 percent of most recent visits are to clinics. (Less than four percent of all visits are to counselors, so this study excluded them.)[92] The federal programs that established these clinics were intended to serve low-income women and adolescents, but are the clinics reaching these populations? Analyses done to date suggest that they are: Black women, poor women, those not covered by insurance and those who have not completed high school are far more likely than others to use clinics to obtain their family planning services. These differences are reduced somewhat, but are still very large, after the introduction of multivariate controls for age, race, education, marital status, income and insurance coverage.[93]

Data collected on the number of family planning visits women made during the 12 months before the survey permit the computation of annual family planning visit rates per 1,000 nonsterile women. The results reveal higher visit rates—especially to clinics—among black women, teenagers and low-income women. In general, larger proportions of these groups use the pill, which requires about two visits per year (one every six months) and therefore increases the visit rates for such women. These groups also may seek more birth control counseling, which would increase their visit rates further.[94]

A great deal of preventive medical care is delivered at family planning visits. Over 80 percent of the women who had made such visits in the 12 months before the survey reported that they had also had a Pap smear, a pelvic exam, a breast exam, a blood pressure test and a urinalysis. Differences in receipt of these services by race, Hispanic origin and other variables were small and generally not significant.[95]

However, only 50 percent of the women reported that they had been tested for STDs (about 47 percent of whites and 67 percent of blacks). Black women were more likely to have been tested than were white women, in every subgroup examined.[96] The higher rate of screening among black women is appropriate, because reported rates of STDs among black women are several times higher than among white women.[97] Not only is the proportion screened higher among black women, but there is also less variation by other characteristics in the proportion screened among blacks than among whites. In sum, black women are likely to be tested for STDs regardless of their other characteristics because they are at high risk for these diseases. White women are more likely to be tested only if they are unmarried or receive family planning care from a clinic rather than a private doctor, live in the South or have had first intercourse at an early age. In short, STD screening at family planning visits appears to be targeted toward the high-risk groups.[98]

- *Health aspects of pregnancy and birth.* About two-thirds of infant deaths in the United States occur in the first 28 days of life.[99] These neonatal deaths are usually related to conditions that develop during pregnancy. The 1982 survey contains a wealth of information on health aspects of pregnancy and childbirth, and a forthcoming report presents much of that information in detail[100]—it covers, for example, differences in the timing and source of prenatal care, smoking and alcohol use during pregnancy, incidence of low birth weight and payment sources for live births. Multivariate analyses should now be conducted to untangle the causes of these differences.

Numerous studies have shown that women who receive prenatal care have better birth outcomes than do those who receive no such care.[101] The beneficial effects of prenatal care are greater among high-risk mothers (including teenagers, Hispanics and blacks). Prenatal care is important because most interventions to improve birth outcomes must occur in the context of such care.

The timing of the beginning of prenatal care is widely used as a convenient, if imperfect, indicator of the adequacy of prenatal care. Black women are much less likely to receive prenatal care in the first trimester than are whites. However, the percentages are more similar by race in the highest categories of educational, income and occupational status. Prenatal care is less likely to begin in the first trimester if the mother is a teenager, has never worked, has a low income, receives Medicaid or is carrying an unwanted pregnancy.

Black mothers, teenagers, never-married mothers and less-educated mothers are also much more likely than other women to get their prenatal care from a clinic rather than from a private doctor.

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*These include community health center clinics, public health department clinics, family planning clinics, student health service clinics and hospital clinics.

Smoking during pregnancy has been shown to increase the risk of low birth weight, preterm birth, miscarriage, infant death and illness during childhood. About one out of three women smoked during their most recent pregnancy. White women are more likely to smoke one or more packs a day during pregnancy than are black women; heavy smoking during pregnancy is most common among never-married, young or less-educated whites.

Consuming alcohol once a week during pregnancy increases the risk of spontaneous pregnancy loss. About one out of eight women drank alcoholic beverages once a week or more during their most recent pregnancy. In contrast to smoking, alcohol consumption is higher among older women and more common among higher status women. Hispanic women are less likely to drink or smoke during pregnancy than are non-Hispanic white women.

Low-birth-weight babies are 40 times more likely than normal-weight babies to die in the first 28 days after birth, and they account for two-thirds of neonatal deaths. Low birth weight is strongly related to race and smoking. For example, the proportion of low-birth-weight babies is twice as high among blacks as among whites (although the proportions among never-married women are as high among whites as among blacks). Babies born to mothers who smoke 15 or more cigarettes a day during pregnancy are about three times as likely to be underweight at birth as babies born to nonsmokers (13 percent vs. four percent). An increased risk of low birth weight was found among both whites and blacks who smoked.

About 68 percent of white women used private medical insurance as a source of payment for their last birth, compared with only 38 percent of births to black women. Births to blacks are four times as likely as births to whites to be paid for by Medicaid.

## Conclusions

These are some of the principal results of research to date on the 1982 NSFG. The public-use computer tape is being used to address other research topics. In addition, the NCHS receives requests from government agencies, businesses and the press for data from the NSFG. Most of these requests are for simple numbers or percentages. Probably the most frequent request, for example, is for trends in the number of infertile couples, or for the percentage of infertile couples by age. Other common requests are for information on the number of women using the pill, IUD, condom or other methods, or for information on adoption or on premarital sex and contraceptive practice among teenagers.

The substantive content and general approach of the 1988 survey are very similar to those of the 1982 NSFG, but new data will be collected on attitudes and knowledge related to STDs such as AIDS and genital herpes, and on diseases that may result in infertility; more detailed data on adoption and child care will also be collected. In addition, questions on the number and outcomes of pregnancies and on the timing of first intercourse, first family planning visit and first prenatal visit have been revised and improved.

The major innovation in the 1988 survey is a procedural one, however. The sample was drawn from among persons or families who participated in the 1986 National Health Interview Survey. This procedure may reduce sampling errors and may permit linkage of individual or family-level data from one survey to the other.

In response to the need for data at more frequent intervals, the survey staff has proposed a telephone reinterview of the 1988 respondents in September 1989. If these reinterviews are completed successfully, they will enable investigators to study the consistency and reliability of birth expectations and other data, update information on contraceptive use, infertility, teenage pregnancy and other basic NSFG indicators, and collect data on new topics not included in the main survey.

In sum, although no single data source can answer all of the important questions on fertility, family planning and reproductive health, the NSFG is a fundamental source for exploring many of them. It is hoped that this article will encourage others to use the NSFG to study further the many questions that remain unanswered.

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# Beliefs About Contraceptive Sterilization Among Low-Income Urban Women

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## Summary

Among a group of low-income clinic patients planning to be sterilized, the vast majority—95 percent—reported believing that sterilization is the surest way to avoid getting pregnant and that it is safer than other contraceptive methods. Among a comparison group who also wanted no more children but did not plan to be sterilized, the majority also held these beliefs, but the proportion was lower (76–80 percent). In both groups, however, only between 64 and 70 percent knew that sterilization makes it impossible to have children in the future.

Between 63 and 68 percent of the women in the sterilization group believed that having the operation would improve their family relationships, emotional state and other aspects of their lives, but only 35–58 percent of the comparison group held these beliefs. On the other hand, women in the comparison group were more likely than those in the sterilization group to believe that sterilization has negative health and psychological effects—for example, changes in menses (more bleeding or cramping) or defeminization. The beliefs held by both groups suggest that it is a conviction regarding the advantages of sterilization, rather than a relative unawareness of the disadvantages, that distinguishes women who plan to be sterilized from those who, although they want no more children, do not have similar plans.

The study results have implications for family planning professionals: Counselors need to be aware that some women seeking sterilization may not understand its permanency or may have an unrealistic appraisal of its potential effect on their lives. Those women who have been inhibited from obtaining a sterilization by inaccurate information or unfounded fears could also be more effectively counseled.

## Introduction

While a wide variety of studies have investigated the sociodemographic correlates of female sterilization in the United States, little is known about the specific beliefs that are associated with its selection as a contraceptive method.[1] Knowledge of such beliefs, especially when the beliefs are inaccurate, could be of invaluable assistance to family planning counselors as they educate patients about sterilization and counsel those who are considering the operation. Such awareness on the part of counselors has the potential to reduce poststerilization regret, particularly with regard to identifying common misconceptions or unrealistic expectations.

The purpose of this article is to describe some of the beliefs about contraceptive female sterilization that are held by low-income urban clinic patients. In this study we examine the content of these beliefs, and the extent to which they are held by women who intend to be sterilized in comparison with women who, despite their stated desire to have no more children, are not planning to be sterilized.

## The Study

This analysis is based on interviews with women attending clinics at three large public hospitals in major metropolises. The hospitals were selected because they could yield a final sample of considerable ethnic and racial diversity, and because they provided access to large numbers of low-income women. Magee Women's Hospital in Pittsburgh, the obstetrics and gynecology arm of the University of Pittsburgh Health Center, is the largest nongovernment obstetrics service in the country and draws patients from the highly urbanized southwestern region of Pennsylvania. There were 2,193 female sterilizations performed there during fiscal year 1982, 500 of these for clinic patients. Grady Memorial Hospital in Atlanta is the largest general hospital in the state of Georgia and among the largest of such hospitals in the nation. It is maintained principally to provide medical care for indigent and emergency patients from Fulton and DeKalb counties. Medical care at Grady is provided under contract with the Emory University School of Medicine. During 1982, nearly all of the 1,822 female sterilizations were performed for clinic patients. The Presbyterian Hospital in the city of New York is the teaching hospital for the College of Physicians and Surgeons of Columbia University. Located in the Washington Heights section of upper Manhattan, the hospital serves a largely Hispanic, low-income population. In 1982, 472 female sterilizations were performed at the hospital, 311 for clinic patients.

The field period for this study extended from April 1985 through June 1986; 99 percent of the interviews were completed by April 1986. The study involved a comparison of women with plans to be sterilized and those without sterilization plans: All women attending the family planning or obstetric and gynecology clinics were screened to determine their eligibility for inclusion in the study. Eligible respondents in both groups were those who indicated that they planned to have no more children, were certain about their plans to have no more children and were at least 21 years of age. Women included in the sterilization group were those who said they planned to be sterilized for contraceptive

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purposes during the next few months (or, if pregnant, at the birth of the baby). Women who stated they had no intention of being sterilized were placed in the comparison group.

Both women seeking postpartum sterilization and those seeking interval sterilization were included in the sterilization group. The numbers of pregnant and nonpregnant women to be included in the sterilization group were determined by the ratio of postpartum to interval sterilizations performed at the respective hospitals. At Magee Women's Hospital, where the total number of female sterilizations performed is fairly evenly distributed between interval and postpartum procedures, approximately half of the participants were pregnant. At the other two hospitals, however, the group planning postpartum sterilization was slightly larger than the group planning interval sterilization, reflecting the somewhat disproportionate number of postpartum sterilizations among poor women at these sites. Because approximately half of the women in the sterilization group were pregnant, the comparison group of women were evenly divided by pregnancy status at each site.

The final sample comprises 1,814 women in total, 1,213 in the sterilization group and 601 in the comparison group. Magee Women's Hospital contributed 403 and 203 women to the sterilization and comparison groups, respectively; Grady Memorial Hospital contributed 402 and 199 women to the respective groups, and Columbia Presbyterian Hospital contributed 408 and 199 women to the respective groups.

Whenever possible, interviews with all eligible women took place at the clinic while they were waiting to see a counselor or health care provider. Each participant received five dollars for her participation in the study. Care was taken to assure the women that their participation in the study was completely voluntary; the interview refusal rate was less than two percent at all sites. After collecting information on the participants' sociodemographic characteristics, we read 27 statements representing different sterilization outcomes to the women, introduced with the following: "Now I am going to read you some statements that people sometimes make about sterilization. As I read each one, tell me if you think it would happen to you if you got a sterilization during the next few months (or, after your baby is born). Remember, there are no right or wrong answers—we just want to get your opinion." The items were read in the same sequential order, without regard to the woman's current sterilization intent.

Table 1 shows a percentage distribution of the socioeconomic and demographic characteristics for the entire sample, the sterilization group and the comparison group. Because all three hospital clinics serve an almost exclusively low-income population, the sample included mostly women from the lower end of the socioeconomic spectrum. One-third of the sample had not completed high school, the majority were unemployed and over half received Aid to Families with Dependent Children (AFDC) and were covered by Medicaid.

A comparison between the two groups indicates that women planning to be sterilized were of slightly lower socioeconomic status than those who had no such plans: Women who intended to be sterilized had had less post–high school education, were slightly less likely to be employed, were more likely to be receiving AFDC and were more likely to be covered by Medicaid than were the comparison group of women. This finding is consistent with the results of other studies which indicate that reliance on female sterilization is inversely related to socioeconomic status in the United States.[2] Our data suggest that this pattern may persist even within the lower socioeconomic strata.

As expected, limiting the participants in the study to those who said they wanted no more children yielded groups of women who were of a similar age and parity. Indeed, both groups had a mean age of 28.4 (not shown). The group of women who intended to be sterilized had a slightly higher mean parity (2.3) than did the comparison women (2.0), a difference that is statistically significant (not shown). Race and ethnicity also varied by sterilization intention: The sterilization group had a higher percentage of women who were white or Hispanic, the comparison group had a larger percentage of black women. Interestingly, this race distribution does not conform to that in the general population, where black women are overrepresented among those sterilized.[3] Thus, it appears that the demographic correlates of sterilization may be different for poor women than for those who are not poor. Other social class differences may exist as well, and it may be inadequate to assume that the established demographic correlates of the procedure apply to all socioeconomic groups in the population. The importance of examining demographic correlates of sterilization within classes is suggested by the data.

**Table 1. Percentage distribution of women who intended to be sterilized and those who did not, by sociodemographic characteristics**

| Characteristic | Total (N=1,814) | Sterilization group (N=1,213) | Comparison group (N=601) | Chi sq. p value |
|---|---|---|---|---|
| **Education** | | | | |
| <High school | 33 | 36 | 28 | 0.001 |
| H.S. diploma | 45 | 45 | 45 | |
| >High school | 22 | 20 | 28 | |
| **Currently employed** | | | | |
| Yes | 19 | 18 | 22 | 0.05 |
| No | 81 | 82 | 78 | |
| **Receives welfare (AFDC)** | | | | |
| Yes | 61 | 63 | 58 | 0.06 |
| No | 39 | 37 | 42 | |
| **Covered by Medicaid** | | | | |
| Yes | 55 | 58 | 47 | 0.001 |
| No | 45 | 42 | 53 | |
| **Race/ethnicity** | | | | |
| White | 18 | 19 | 16 | 0.001 |
| Black | 55 | 52 | 62 | |
| Hispanic | 26 | 28 | 22 | |

### Beliefs About Sterilization

Tables 2 and 3 present the beliefs held by the women who intended to be sterilized and by those who did not. The items from the list have been divided into those characteristics and outcomes of sterilization considered to be potential advantages (Table 2, page 220) and those that are potential disadvantages (Table 3, page 221). The items in each of these tables have been grouped on the basis of common general themes; within each subdivision, items are ranked in order of the decreasing disparity between the women who intended to be sterilized and the comparison group.

Because all the women interviewed said that they were certain they wanted no more children, we classified as advantages those items proposing that sterilization is the surest way to keep from getting pregnant and that the operation makes it impossible to have children, as shown in Table 2. The majority of both groups subscribed to these two beliefs, but the women in the sterilization group were particularly convinced that sterilization would be the surest way to avoid a pregnancy. It is noteworthy that only 70 percent of the sterilization group and a slightly smaller proportion of the comparison group believed sterilization would make it absolutely impossible to have future children. While some women may have been counseled regarding the rare incidence of sterilization failure, these figures may reflect a belief among a nontrivial proportion of both

**Table 2. Percentage of women who intended to be sterilized and those who did not, by beliefs regarding positive consequences of sterilization**

| Consequence | Sterilization group | Comparison group | Absolute difference |
|---|---|---|---|
| **Effectiveness** | | | |
| Is surest way to keep from getting pregnant | 95 | 76 | 19 |
| Makes it impossible to have children | 70 | 64 | 6* |
| **Normative value** | | | |
| Would be wanted by partner/husband | 67 | 36 | 31 |
| Would be wanted by sister or mother | 57 | 36 | 21 |
| Would be wanted by doctor | 50 | 35 | 15 |
| **Social outcomes** | | | |
| Leads to better relationship with partner/husband | 68 | 40 | 28 |
| Leads to being a better mother | 63 | 35 | 28 |
| Makes it easier to go to school or get a job | 63 | 42 | 21 |
| Makes sex more enjoyable | 70 | 55 | 15 |
| **Health/psychological outcomes** | | | |
| Would make overall situation better | 85 | 54 | 31 |
| Would make respondent more relaxed and happy | 86 | 58 | 28 |
| Is safer than other methods | 95 | 80 | 15 |
| Would end hassle of using other methods | 91 | 84 | 7 |

*$p<0.05$. All other absolute differences are significant at $p<0.0000$.

groups that the procedure is reversible.*

The percentages for the remaining items in Table 2 repeat this pattern. For example, women in the sterilization group were more likely to believe that sterilization would be something that someone in their life—a partner, a sister or mother, or a doctor—would want them to do. The difference between the two groups is most pronounced for the partner (or husband) item—67 percent of the sterilization group but only 36 percent of the comparison group believed that sterilization is something that their partner (or husband) would want them to do. It is also noteworthy that whereas a doctor's preference does differentiate the two groups to some extent, the disparity is relatively small compared with others in the table.

The two groups are also differentiated by the items that pertain to the expected impact that sterilization would have on the relationships in a respondent's life. Again, women who planned to be sterilized were more likely than women in the comparison group to believe that the procedure would improve relationships with their partner and children, would make it easier for them to go to school or to work and would enable them to enjoy sex more. Although 35–55 percent of the comparison group believed this as well, these women were not as convinced as women who intended to be sterilized that the procedure would result in such positive outcomes.

Finally, the vast majority of women who intended to be sterilized believed that the procedure would have general far-reaching and positive effects on their lives: It would be safer and less of a hassle than other contraceptive methods, it would make them more relaxed and happy and it would make their overall situation better. Although the majority of the comparison group also believed these outcomes would occur, it should be stressed that the differences between groups remain constant in this subdivision. Of all the items in Table 2, the largest differences between the sterilization and the comparison groups are seen in the items pertaining to a partner's (or husband's) attitude toward sterilization and the belief that sterilization would make one's overall life situation better.

As shown in Table 3, fewer women in the sterilization group than in the comparison group believed that sterilization has negative consequences or characteristics. However, the overall difference between the means for the two groups (14) is somewhat smaller than that observed in Table 2 (20) (not shown). Thus, it appears that compared with other women, women who intended to be sterilized were more strongly convinced of the advantages of sterilization, rather than totally unconvinced of its disadvantages.

The first group of items in Table 3 reflect beliefs about menstrual changes that occur from sterilization. Thirty-four percent of the women in the comparison group, but only 16 percent of the sterilization group, believed that the procedure would result in more cramping during their periods. Nineteen percent of the women in the sterilization group and 25 percent in the comparison group believed that sterilization would cause more bleeding during their periods. Fewer women in both groups believed that sterilization would cause their periods to stop, but again, more women in the comparison group adhered to this belief. The differences between the groups for these last two beliefs are small.

The set of beliefs that pertain to the perceived negative short-term or minor health consequences of sterilization show that women who were not intending to be sterilized were also more likely to believe that there would be adverse effects—for instance, an unattractive scar or risks from anesthesia. In this particular set, the highest proportion of women in both groups believed that temporary side effects or discomfort would accompany the procedure, and the absolute difference between the groups is larger for this item than for the others. Risks from anesthesia's are of special interest because of substantial proportions mentioning them.

The next set of items pertain to more serious or more long-lasting physical and emotional consequences from sterilization. Again, and as might be expected, women in the comparison group were more likely than those in the sterilization group to believe that undergoing a sterilization would cause them to feel emotionally upset or less feminine or womanly; the differences between the groups, particularly for the former item, are somewhat large. The nature of these items is extremely subjective, and the belief pertaining to the long-term health consequences may be of the most interest: Whereas only four percent of the sterilization group believed that the procedure would result in long-term health problems, over 20 percent of the comparison group believed that this would be the case.

The final items in Table 3 require little discussion. The pattern observed thus far remains consistent—women in the comparison group were more likely than those in the sterilization group to believe that sterilization would require many clinic visits, reduce chances for marriage, be expensive and conflict with religious doctrine.

## Discussion

An examination of the responses to these 27 items reveals several important patterns. First, the women, regardless of their intention to be sterilized, were more likely to believe that sterilization would result in positive, as opposed to negative, outcomes.

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*A variety of meanings could be derived from a woman's negative response to this item; for example, sterilization is not permanent, it is easily reversible, sterilization reversal is sometimes possible or sterilization occasionally fails to prevent pregnancy. Most counselors would agree, however, that women who undergo sterilization need to understand that it is a permanent contraceptive method and that it does make it impossible to have children in the future, despite the fact that reversal is sometimes possible and that sterilization occasionally fails. While it would have been useful to ask women specifically about their beliefs regarding the feasibility of sterilization reversal, the information here suggests that the subject of permanence should be addressed and clarified in counseling.

Indeed, the vast majority of women in the sterilization group believed that almost every advantage listed would occur, and the majority of women in the comparison group likewise believed that a good number of them would occur. While the extent of belief regarding the negative outcomes of the procedure is not trivial for either group, the proportion of women in the sterilization group that believed a particular negative consequence would result exceeded 25 percent in only one instance, and exceeded 50 percent in the comparison group only once. Both maximum percentages are for the same item—the perception that sterilization would cause temporary side effects or discomfort.

Second, as was expected, women in the sterilization group were more likely than those in the comparison group to believe sterilization to have positive consequences. Conversely, women not planning to be sterilized were more likely to believe negative results would occur. Differences in beliefs between the two groups, however, are greater with respect to the advantages of sterilization. This suggests that it is a conviction regarding the benefits, rather than a relative unawareness of negative consequences, that distinguishes women who plan to be sterilized from those who, although of similar age, parity and childbearing intention, have no plans to undergo sterilization.

Perhaps of greatest use to family planning professionals is the identification of unrealistic positive beliefs about sterilization among women who are planning to be sterilized, and the inaccurate or improbable negative consequences among those not intending to undergo the procedure. Knowledge of these beliefs could help reduce two different types of potential regret associated with sterilization—that which results from unfulfilled expectations poststerilization, and that which could result if an otherwise desired sterilization is not sought or is postponed or cancelled because of inaccurate information or unfounded fears.

With regard to the former type of regret, it is troubling that 30 percent of the sterilization group did not believe that sterilization would make it absolutely impossible to have children in the future. As mentioned earlier, it is possible that some of these women have been counseled regarding the occasional failure of sterilization to prevent pregnancy. Other women, however, may have believed that the procedure is reversible and that, if they so desire, they could have children after being sterilized. While it is true that reversal is possible in a very small minority of cases, sterilization should, for all intents and purposes, be considered permanent. Counselors need to be aware that a belief in the procedure's reversibility may far exceed what is realistically possible, thus constituting a potential basis for regret among a fair number of sterilized women.

Poststerilization regret may also result from expected positive outcomes that never materialize. In this regard, specific beliefs—that sterilization will lead to being a better mother, that it will make it easier to go to school or get a job—require careful consideration because such outcomes are unlikely to occur without other real changes in a woman's life circumstances. Of course, a belief in those outcomes may not indicate that a woman thinks sterilization per se would produce them, but it may be useful for sterilization counselors to address and explore with patients the role that sterilization is expected to have in effecting change in their lives. This advice applies as well with respect to the more general benefits—such as, improvements of the woman's overall situation or improvement of her psychological state—that were expected by a large percentage of women in the sterilization group.

Table 3 reveals several notions about negative outcomes that are potentially unrealistic or inaccurate but are believed by quite a few women in the comparison group. For example, we know of no empirical evidence that indicates that sterilization causes long-term health problems, yet 21 percent of those without sterilization intentions believed this to be the case. Contraceptive sterilization does not cause a cessation of the menses, yet 12 percent of the women in the comparison group believed that it does. Perhaps most important, 43 percent of these women also believed that sterilization would require many clinic visits (this item also yielded one of the largest differences between the two groups). It is possible that women without sterilization intentions might have an unrealistic picture of what is involved in obtaining a sterilization (compared with prescription methods of birth control), and counselors providing information to women need to keep this in mind.

Thirty-five percent of the women who did not intend to be sterilized, compared with 22 percent of those who did, believed that the procedure would be expensive. We recognize that for women who had no health insurance or who were not covered by Medicaid, this assessment of expense may be quite accurate. Thus, we limited a comparison between the groups to women who were covered by Medicaid: Women in the comparison group were still more likely than women in the sterilization group to believe that a sterilization would be expensive—34 percent vs. 20 percent (not shown). It is possible that there is a lack of awareness among women covered by Medicaid that sterilization can be paid for by this health insurance program.

**Table 3. Percentage of women who intended to be sterilized and those who did not, by beliefs regarding negative consequences of sterilization**

| Consequence | Sterilization group | Comparison group | Absolute difference |
|---|---|---|---|
| **Menstrual changes** | | | |
| Causes more cramping during period | 16 | 34 | 18 |
| Causes periods to stop | 2 | 12 | 10 |
| Increases bleeding during period | 19 | 25 | 6* |
| **Short-term or minor health effects** | | | |
| Causes temporary side effects or discomfort | 39 | 59 | 20 |
| Causes unattractive scar | 7 | 18 | 11 |
| Causes pain during procedure | 15 | 25 | 10 |
| Is risky because of anesthesia | 25 | 32 | 7* |
| **Other health/ psychological outcomes** | | | |
| Causes emotional upset | 8 | 34 | 26 |
| Causes long-term health problems | 4 | 21 | 17 |
| Makes one feel less feminine or womanly | 4 | 19 | 15 |
| **Other outcomes** | | | |
| Requires many clinic visits | 22 | 43 | 21 |
| Reduces chances of marrying in the future | 8 | 23 | 15 |
| Is expensive | 22 | 35 | 13 |
| Disapproved of by religion | 15 | 26 | 11 |

*p<0.01. All other absolute differences are significant at p<0.000.

We are not prepared to suggest that the other beliefs about the negative consequences of sterilization, which are held by a substantial proportion of women in the comparison group, are necessarily unrealistic. Concerns about discomfort, pain and anesthesia may be extremely valid and must be considered on a case-by-case basis. However, we do think that it is important for sterilization counselors and other health care providers to be aware of these concerns when presenting information about sterilization.

*(Continued on page 233)*

# Sterilization Regret Among Women In Metropolitan Montreal

*By Nicole Marcil-Gratton*

## Introduction

The study reported here represents the final stage in a series of research projects, begun 10 years ago, dealing with the phenomenon of female sterilization among women in Quebec. Our earlier research had documented the dramatic increase in the number of tubal ligations performed during the 1970s (there were 20,000–30,000 procedures performed each year starting in 1973), the widespread prevalence of contraceptive sterilization throughout the female population and the growing tendency among Quebec women to undergo sterilization at ever younger ages.[1] Throughout the 1970s, tubal ligation rates in Quebec remained consistently higher than those in the United States.

In 1982, 45 percent of ever-married Quebec women aged 20–49 were protected from pregnancy by surgical sterilization: Twenty-eight percent had undergone tubal ligation, eight percent had had a hysterectomy and 10 percent had a vasectomized husband. Among 40–44-year-olds, 69 percent of ever-married women were protected by surgical sterilization: Forty-two percent had undergone tubal ligation, 12 percent had had a hysterectomy and 15 percent had a vasectomized husband.[2] Results of a study carried out in 1976 in Quebec showed that 70 percent of ever-married women aged 20–39 either were already protected by sterilization or said they would probably consider having a tubal ligation after bearing all the children they wanted.[3]

The pill and the IUD were the second and third most commonly used contraceptive methods in Quebec in the early 1980s: Overall, among ever-married women in 1982, 45 percent were protected by surgical sterilization, 13 percent used the pill and eight percent used the IUD. All other methods combined were used by 10 percent of ever-married women, and 24 percent of such women were not practicing contraception.[4] These figures are evidence of an evolution in the attitudes and behavior of couples living in a society that, until recently, was known for its relatively high level of fertility and for its attachment to traditional methods of contraception.[5]

The transition to the use of modern contraceptive methods, particularly to a method as radical as sterilization, has had some unforeseen consequences. In particular, the satisfaction experienced by Quebec women who chose to have a tubal ligation in the 1970s may not have been as universal as was originally believed. The first indications of the existence of sterilization regret came from studies carried out in clinics where women who had had a tubal ligation sought medical help to reverse their sterilization. Several studies attempted to identify the characteristics of women whose regret was so extreme that they were willing to undergo a difficult and uncertain surgical procedure to reverse tubal ligation.[6] An analysis of such women revealed that a young age at sterilization and marital instability were the major factors contributing to requests for sterilization reversal. One remaining unanswered question is whether women who deeply regret having been sterilized are a few exceptional cases or whether they represent only the tip of the iceberg, or, most plausibly, whether reality lies somewhere between the two extremes.

In this article, we measure the frequency and intensity of regret and explore some of the reasons women have given for regretting their decision to undergo sterilization. We also examine the connection between regret and women's background characteristics.

## The Data

Unlike previous analyses of poststerilization regret, the present study is based on a randomly selected, representative sample of women who had undergone tubal sterilization. In the winter of 1985, interviewers at the University of Montréal Centre de Sondage (Polling Center) conducted telephone interviews with 497 women aged 25–44 who had had a tubal ligation and were living in the greater Montreal area. The decision to conduct interviews by telephone was made following a study that showed this technique to be valid in somewhat similar situations.[7] Random sampling was assured by the technique used to choose respondents: To reach a probability sample of about 500 women, 9,681 telephone numbers within metropolitan Montreal were generated at random by the computer. Considering the intimate nature of many of the questions in this kind of survey, telephone interviews might appear to be a particularly risky way of eliciting information; however, the results proved quite satisfactory. The response rate among women who had undergone tubal ligation was 68 percent, which exceeded the expected rate of 60 percent and was judged satisfactory by the poll takers.[8]

Respondents were asked a number of questions covering a broad range of attitudes and behaviors, including their attitudes toward children, marriage and work outside the home; their use of different contraceptive methods before sterilization; their degree of satisfaction with those earlier methods and the connection between their satisfaction level and their decision to resort to sterilization; their reasons for choosing to undergo sterilization; and the circumstances surrounding their decision. In addition, respondents were asked to assess certain aspects of their psychological and physical states following sterilization. The questionnaire was well-received: Ninety-seven percent of respondents

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judged it to be interesting, almost 90 percent underestimated the real length of the interview and 75 percent said they preferred being interviewed by telephone to being interviewed in person at home.

There remains, however, a question about the representativeness of the survey sample. Were the women who agreed to be interviewed by telephone for 36 minutes, on average, representative of all women in the survey area who had undergone tubal ligation? As far as we were able to determine, the selection of our sample was not biased, except to the extent that people who respond to telephone interviews may not be representative of all people. To assess the representativeness of our sample, we compared the demographic characteristics of our respondents with those of women living in the Montreal area who had undergone tubal ligation and had answered the relevant questions in the Canadian Fertility Survey (CFS) of 1984.[9] As Table 1 shows, the CFS sample and our sample were similar with regard to the women's age at the time of the surveys, age at sterilization, year of sterilization, number of children, birthplace, education and marital status. Native language was the only variable where our sample matched much better with the sterilized women from all of Quebec than with those specifically from metropolitan Montreal.

## Sources of Dissatisfaction

Satisfaction with sterilization is defined by the absence of emotional or physical problems associated with it. On the other hand, dissatisfaction can be associated with diverse problems of varying severity. We closely examined the most commonly cited reason for sterilization regret—that is, the desire to have another child. However, some women mentioned other reasons for regretting their sterilization, and we looked at those as well.

For example, we asked respondents about the impact of sterilization on their feelings of femininity, the quality of their sex life and their mental health (data not shown). Ninety-two percent of the women said that being surgically sterile did not make them feel any less feminine than they had felt before they had undergone the procedure. Sixty-seven percent of respondents experienced no change in the quality of their sex life, and 30 percent believed that their sex life actually improved after sterilization. And the vast majority of women (94 percent) believed either that sterilization had had no effect on their mental state (40 percent) or that it had had a positive psychological impact (54 percent).

There is currently a debate in the medical community over whether women who have a tubal ligation are more likely than others to experience subsequent menstrual problems or to undergo subsequent hysterectomy.[10] Although it is beyond the scope of our analysis to determine if, in fact, sterilization is positively associated with subsequent menstrual problems or with the need for a hysterectomy, we were able to probe respondents' perceptions of such matters. Our data (not shown) reveal that 52 percent of respondents reported that following sterilization they experienced at least one negative change in their menstrual cycle, including decreased menstrual regularity, longer periods, increased menstrual flow and increased menstrual pain. Sixty-five percent of these women believed that the changes were associated with sterilization. However, such women were no more likely than others to regret their sterilization.

**Table 1. Percentage distribution of women aged 25–44 who had a tubal sterilization, by selected characteristics, 1985 Survey of Sterilized Women in Metropolitan Montreal and 1964 Canadian Fertility Survey**

| Characteristics | Metropolitan Montreal Survey | Canadian Fertility Survey | |
|---|---|---|---|
| | (N=497) | Metropolitan Montreal region (N=97) | All of Quebec (N=252) |
| **Age at survey** | | | |
| 25–29 | 7.0 | 7.6 | 6.8 |
| 30–34 | 17.9 | 21.2 | 21.4 |
| 35–39 | 35.8 | 38.8 | 42.3 |
| 40–44 | 39.2 | 32.4 | 29.5 |
| **Age at sterilization** | | | |
| 20–24 | 4.8 | 2.5 | 4.5 |
| 25–29 | 29.0 | 29.6 | 27.4 |
| 30–34 | 44.9 | 42.7 | 43.8 |
| 35–39 | 18.5 | 21.3 | 21.9 |
| 40–44 | 2.8 | 4.0 | 2.3 |
| **Year of sterilization** | | | |
| Before 1976 | 25.2 | 18.1 | 19.8 |
| 1976–1981 | 50.9 | 54.2 | 55.1 |
| 1982–1985 | 23.9 | 27.7 | 25.4 |
| **No. of children** | | | |
| 0 | 5.0 | 4.3 | 2.4 |
| 1 | 13.3 | 13.3 | 13.6 |
| 2 | 48.5 | 47.3 | 40.7 |
| 3 | 24.1 | 25.4 | 31.5 |
| ≥4 | 9.0 | 9.8 | 11.9 |
| **Birthplace** | | | |
| Quebec | 83.7 | 81.6 | 91.9 |
| Canada excluding Quebec | 5.3 | 7.2 | 3.8 |
| Other | 11.0 | 11.2 | 4.3 |
| **Years of schooling** | | | |
| 0–7 | 10.1 | 6.2 | 13.3 |
| 8–12 | 60.1 | 63.7 | 59.6 |
| 13–15 | 18.7 | 17.6 | 17.5 |
| ≥16 | 11.1 | 12.5 | 9.4 |
| **Native language** | | | |
| English | 10.5 | 18.3 | 10.2 |
| French | 83.0 | 71.7 | 85.5 |
| Other | 6.5 | 10.2 | 4.2 |
| Total | 100.0 | 100.0 | 100.0 |

Hysterectomy was less frequently perceived to be an aftereffect of sterilization. Of the 70 women in our sample who had had a hysterectomy some time after undergoing tubal ligation, 34 percent believed that the hysterectomy was necessitated by the sterilization, and an additional six percent thought that there might be an association between the two events. Women who associated their hysterectomy with sterilization were significantly more likely to report dissatisfaction with the procedure or to admit that the procedure was poorly timed than were those who perceived no connection between the two events.

## Desire for Another Child

Women who decide after having a tubal ligation that they would like to have another child are the most likely to regret having been sterilized. For these women, sterilization may become a major obstacle to personal happiness. This kind of sterilization regret can, of course, be experienced in different ways and can vary in intensity. Feelings of regret can run the gamut from a transitory yearning that the woman experiences in the presence of a newborn baby, to an overwhelming sorrow that impels the woman to seek reversal of sterilization. In some cases, women who regret their sterilization do not openly express their feelings to their family. It is even rarer for such women to discuss their dissatisfaction with a physician, either because they are unaware of the existence of surgical techniques to restore fertility or because they know of the difficulties inherent in such procedures.

It is particularly difficult to accurately measure the intensity of sterilization regret because of the complexity of emotions involved. What we have done, therefore, is to describe the range of regret, in order of increasing intensity, using four measures: women who reported that they had ever experienced regret; women who said that they would have tried to have another child if they had not been sterilized (strong regret); women who had discussed with their doctor the possibility of reversing their sterilization (extreme regret); and women who had asked to have their sterilization reversed (also extreme regret). In order to analyze what circumstances are most likely to lead to extreme regret, we focused on the second measure—the proportion claiming that they would have tried to have another child.

Given the retrospective nature of the survey, however, we were concerned that the amount of time that had elapsed between the procedure and the survey might be a confounding factor. Our findings were reassuring: With the exception of women who had undergone tubal ligation fewer than 24 months before the interview, the proportion of women who admitted strongly regretting their decision to be sterilized did not vary significantly with the amount of time that had elapsed between the procedure and the survey.

## Frequency of Regret

A study carried out in 1981 among obstetrician-gynecologists in Quebec[11] found that two out of three physicians believe that poststerilization regret is an infrequent phenomenon affecting fewer than five percent of sterilized women. This level is close to the proportion of women in our sample (four percent) who reported talking with their doctor about the possibility of reversing their sterilization (see Table 2). However, the frequency of sterilization regret is apparently much higher. Overall, 21 percent of respondents said that they had experienced regret at some point following the procedure, but had not discussed their feelings with a physician. If we add to this group the women who had expressed regret to their physician, we find that 25 percent regretted their sterilization decision to some extent.*

**Table 2. Percentage distribution of sterilized women 25–44, by whether they experienced regret after the procedure, according to age at sterilization**

| Extent of regret | Age at sterilization | | | |
|---|---|---|---|---|
| | All (N= 495) | 20–29 (N= 167) | 30–34 (N= 222) | ≥35 (N= 106) |
| **Never regretted** | **74.9** | **64.1** | **79.7** | **82.1** |
| **Ever regretted** | **25.1** | **35.9** | **20.3** | **17.9** |
| Did not discuss regret w/ doctor | 21.2 | 27.5 | 18.5 | 17.0 |
| Did discuss | 3.9 | 8.4 | 1.8 | 0.9 |
| Did not request reversal | (2.7) | (5.4) | (1.3) | (0.9) |
| Did request | (1.2) | (3.0) | (0.5) | (0.0) |
| Would not have tried to have another child | 7.3 | 8.9 | 6.8 | 5.7 |
| Would have tried | 12.7 | 20.4 | 8.6 | 9.4 |
| Not sure | 5.1 | 6.6 | 4.9 | 2.8 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

Note: Percentages of women who "ever regretted," "discussed regret with a doctor" and "would have tried (to have another child)" differ significantly at p≤0.05, according to age at sterilization.

Although not all of these women claimed that they would have tried to have another child, the proportion who would have done so is far from negligible: Half of those who admitted regretting their decision, or 13 percent of all sterilized women in our sample, said they would definitely have tried to have another child if they had been able to conceive.

Because the survey was retrospective, recall bias may have falsified some of the responses. It could be argued that the figure of 13 percent is inflated because the recall of past events may give rise to feelings that were never actually manifested. On the other hand, this proportion may underestimate the extent of feelings of strong regret because people tend to rationalize their behavior and have difficulty admitting that they may have made a serious mistake. While we cannot know with certainty whether our data reflect the exact level of sterilization regret, we believe they show that the problem does exist.

One thing is certain: Only a very small fraction of women had taken steps to reverse their sterilization—few women (four percent) had ever discussed with a doctor their desire to restore their fertility, and even fewer women (one percent) had requested sterilization reversals. It should be noted that in Canada, the cost of sterilization reversal is not a factor in the demand for such procedures because it is covered by the country's universal health insurance system.

## Age at Sterilization

An analysis of variance (not shown) indicates that young age at sterilization is a major determining factor in the likelihood that a woman will question the sterilization decision, even when other factors are considered. As Table 2 shows, about 20 percent of women who had undergone tubal ligation at age 30 or older said that they had experienced sterilization regret; however, 36 percent of women sterilized in their 20s admitted having regretted their decision, at least to some degree. Further, women who were in their 20s at sterilization were considerably more likely to subsequently discuss the possibility of sterilization reversal with a doctor than were those 30–34 or 35 and older (eight percent vs. two percent and one percent, respectively), but this proportion represents only one-quarter of the younger women who said they had experienced regret.

The most important finding is that 20 percent of women who had been sterilized before the age of 30 reported strong regret, as indicated by their desire to have had another child. However, despite what may be a real temptation to blame the sterilization decision on the doctor, 55 percent of women who subsequently regretted having been sterilized conceded that the decision had been their own (not shown).

Although women aged 20–29 at the time of sterilization were more likely to have experienced strong regret, a surprisingly high proportion—almost 10 percent—of women aged 30 or older at the time of sterilization said they would have tried to have another child if they had not been sterilized. Among women aged 35 and older, one would, however, expect that the risk of strong regret would not be high because such women are approaching the end of their childbearing years. Nevertheless, because sterilization regret usually occurs relatively soon after surgery, older women sometimes experience it: Overall, 70 percent of all women who would have tried to have another child first experienced the desire fewer than three years after tubal ligation, and 75 percent of women who had been sterilized after the age of 30 did so (not shown).

## Other Factors

The literature clearly identifies marital instability as a frequent factor in poststerilization regret.[12] A high proportion of patients who request sterilization reversals have changed partners since being sterilized: One study we did found that 65 percent of candidates for sterilization reversal in two large fertility clinics in Montreal had changed partners since undergoing sterilization; among these women, the desire to have a child with the new partner was the main reason they sought reversal of the operation.[13]

Table 3 shows that women who had become widows or were separated or divorced following sterilization and women who were never legally married were significantly more likely than were those who had remained married to the same husband to experience strong regret (17 percent and 23 percent vs. 10 percent). However, in the case of women in intact marriages, regret was closely associated with early age at sterilization. In fact, strong regret was as common among women in stable unions who had undergone sterilization before the age of 30 (18 percent) as it was among all women whose unions had broken up (17 percent). Among stable couples, the length of time the woman is exposed to the risk of regret appears to contribute to the likelihood of regret in the same way as does the presence of a new partner among women whose unions have broken up.

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*The 1982 National Survey of Family Growth (NSFG) found that 26 percent of U.S. women who had undergone sterilization would like to have a(nother) baby, and 10 percent would want to have the operation reversed if it could be done safely. The NSFG data are not strictly comparable with ours, because the NSFG measured respondents' feelings of regret at the time of the survey, whereas our survey measured regret over the period of time between the procedure and the survey.

One of the misconceptions about women who undergo tubal ligation, and particularly about those who do so at young ages, is that they reject the maternal role and consequently have fewer children than do others. Some of the public may also believe that the regret that some women experience after sterilization comes from unfulfilled maternal longings. The facts, however, do not corroborate these notions. Our data (not shown) indicate that overall, Montreal-area women who resort to sterilization have already given birth to more children than have other comparable women in their age-group: More than 80 percent of the Montreal-area sterilized women aged 25–44 had had at least two children, compared with 70 percent of all women in the same age-range in the Montreal region who had had, or expected to have, at least two children. The younger the age at sterilization, the more children the woman was likely to have had. Women over the age of 35 were much more likely than younger women to undergo sterilization when they were childless or had only one child. Further, the distribution of women who strongly regretted sterilization and women who had never experienced regret did not vary significantly according to the number of children born.

Once again, what is most striking in the data on number of children is the relationship between early age at sterilization and subsequent regret. As Table 3 shows, regardless of the number of children they had given birth to, women who were sterilized before the age of 30 were more likely than older women to strongly regret having been sterilized. Additionally, women who had undergone tubal ligation before the age of 30 and who had at least three children were as likely to experience strong regret as women who were sterilized at a later age but had none or only one child (18 percent vs. 14 percent). The risk of regret appears to be more closely associated with the timing of sterilization than with a supposed feeling of emptiness created by a "lack" of children.

**Table 3. Percentage of sterilized women aged 25–44 who would have tried to have another child if they had been fecund, by selected characteristics, according to age at sterilization**

| Characteristic | Age at sterilization | | | | | |
|---|---|---|---|---|---|---|
| | All | | <30 | | ≥30 | |
| | % | N | % | N | % | N |
| **Marital status** | | | | | | |
| Separated, widowed, divorced | 17.1 | 123 | 22.2 | 45 | 14.1 | 78 |
| Never-married | 22.6 | 31 | — | 11 | — | 20 |
| First marriage | 10.3 | 340 | 18.2 | 110 | 6.5 | 230 |
| **Years of schooling** | | | | | | |
| ≤7 | 26.0 | 50 | 42.1 | 19 | 16.1 | 31 |
| 8–12 | 12.1 | 296 | 18.9 | 116 | 7.8 | 180 |
| ≥13 | 9.5 | 147 | 12.5 | 32 | 8.7 | 115 |
| **No. of children** | | | | | | |
| 0–1 | 17.8 | 90 | — | 18 | 13.9 | 72 |
| 2 | 12.0 | 241 | 19.8 | 86 | 7.7 | 155 |
| ≥3 | 11.0 | 164 | 17.5 | 63 | 6.9 | 101 |
| **Husband's income (in Canadian dollars)** | | | | | | |
| <20,000 | 14.3 | 63 | 24.1 | 29 | 5.9 | 34 |
| 20-30,000 | 17.4 | 92 | 25.0 | 32 | 13.3 | 60 |
| 30-50,000 | 9.3 | 139 | 17.5 | 40 | 6.1 | 99 |
| ≥50,000 | 6.0 | 33 | — | 8 | 8.0 | 25 |
| **Labor force participation** | | | | | | |
| Now and when children young | 9.9 | 153 | 13.2 | 53 | 8.0 | 100 |
| Now, but not when children young | 8.3 | 96 | 16.0 | 25 | 5.6 | 71 |
| Not now, but when children young | 14.5 | 62 | 24.0 | 25 | 8.1 | 37 |
| Not now and not when children young | 17.8 | 157 | 27.1 | 59 | 12.2 | 98 |

Note: In this table, Ns do not always add up to 495 because of missing data.

At first glance, Table 3 appears to indicate that strong regret is more common among less-educated and more economically disadvantaged women (as determined by their partner's income) than it is among others. However, when we examined the proportions of women who experienced strong regret, by age at sterilization and using multiple classification analysis, the relationship between education, socioeconomic status and sterilization regret is attenuated. In fact, within all of the subcategories shown in Table 3, women who were sterilized before the age of 30 were the most likely to experience sterilization regret. Apparently, the timing of sterilization, or the calendar of events in a woman's reproductive life that lead to early recourse to sterilization, is the key factor leading to sterilization regret.

Despite the increase in the proportion of women who participate in the work force, working outside the home is still generally considered to conflict with maternal aspirations. It might be expected that sterilized women who are in the labor force are less likely than others to regret having been sterilized. The survey results indicate that this relationship holds true, although it is a less important determinant of sterilization regret than is early age at sterilization. On a rough scale that measures women's labor force activity, the least active women were almost twice as likely as the most active women to strongly regret having been sterilized (18 percent vs. 10 percent). It appears that women who were not working at the time of the survey were more likely to strongly regret having been sterilized than were women who were working at that time. Presumably, women who are relatively satisfied with their work* may be at reduced risk for sterilization regret.

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*Eighty-five percent of the women who had worked at some time said they were satisfied with having worked outside the home, and 76 percent of women who were working at the time of the survey said that one of their reasons for doing so was that they enjoyed working.

Among women who have never worked, those who have a tubal ligation before the age of 30 are the most likely to experience regret: Twenty-seven percent of such women regretted not being able to bear another child. The combination of not being employed and early age at sterilization appears to create conditions favorable to feelings of regret: Of the women who say they requested reversal of a tubal ligation (albeit a small number), five out of six were not working outside the home and had been sterilized before the age of 30.

Given the data we collected, it is difficult to determine the extent to which working outside the home diminishes the risk of strong sterilization regret. It appears, however, that although some women who work regret having been sterilized, those who are less conflicted about their dual roles as working women and mothers are at less risk of having regret than are others. Among respondents who were working at the time of the survey but who reported believing that it is very important for mothers of young children to stay at home (not shown), feelings of strong regret were almost as frequent as they were among nonworking women (14 percent and 17 percent, respectively). In contrast, only four percent of working women who reported attaching little or no importance to staying at home with young children experienced strong regret. It is quite possible that these women particularly enjoy working and thus are protected from having second thoughts about sterilization.

## Reasons for Choosing Tubal Ligation

To determine why respondents chose to have tubal ligations, we asked them to rank the six most commonly cited reasons for undergoing sterilization in order of importance to them. It seemed likely that some women, particularly those who eventually regretted their decision, would be reluctant to say that they had chosen to be sterilized because of the permanent nature of the procedure. However, we found that the respondents' answers were surprisingly candid in this respect.

Table 4 shows the relative importance respondents accorded to the six suggested motives for sterilization, according to whether the women had experienced no regret or strong regret. Although the frequency of responses varied between those who were satisfied with sterilization and those who regretted it, the ranking of different reasons was almost identical.

Overall, the complete contraceptive effectiveness of sterilization was by far the most important motive for choosing to undergo sterilization: Ninety-five percent of respondents who had never regretted their decision, and 78 percent of those who strongly regretted it, had accorded a great deal of importance to this factor when they chose to be sterilized.

**Table 4. Percentage of women aged 25–44 who had a tubal sterilization for various reasons, according to whether they experienced strong poststerilization regret**

| Reason for sterilization | No regret (N=371) | Strong regret (N=63) |
|---|---|---|
| Method efficacy | 94.9 | 77.8 |
| Permanency of method | 89.7 | 65.0 |
| Health risks of another pregnancy | 46.3 | 60.3 |
| Fear of pill side effects | 39.6 | 21.3 |
| Problems with other methods | 32.3 | 28.5 |
| Marital problems | 13.0 | 20.0 |

Note: Women who said they experienced regret, but did not say they would have tried to have another child are excluded from the "strong regret" column in this table and Table 5.

The second most frequently cited reason for choosing to be sterilized was the fact that sterilization offers permanent protection against pregnancy. Overall, 90 percent of the women who said they were satisfied with tubal ligation gave this reason. Surprisingly, 65 percent of women who strongly regretted their decision said they had chosen to be sterilized for the same reason.*

The third most common reason cited by both groups of women was concern that another pregnancy would pose risks to their health. Almost half (46 percent) of the satisfied group and 60 percent of the dissatisfied group said that health risks associated with pregnancy had been a motive for choosing sterilization. On the face of it, these findings are surprising. Do they imply that a large proportion of women who regret having been sterilized are dissatisfied because they felt compelled to undergo tubal ligations for health reasons? An analysis of the results of fertility surveys carried out in Quebec suggests that the retrospective nature of such inquiries makes it very difficult to distinguish between women whose health would have been compromised by another pregnancy and those who are rationalizing having made a decision with which they are dissatisfied.[14] Consequently, great caution should be exercised when interpreting reported motivations for sterilization that relate to the health rationale.

Only 40 percent of the satisfied group and 21 percent of the dissatisfied group reported that fear of the side effects of prolonged pill use had influenced their decision. Although these proportions are not negligible, it is somewhat surprising that the public debate about the presumed side effects of the pill has not motivated a higher proportion of women to turn to a method that has no major side effects.

Respondents also accorded secondary importance to problems with other contraceptive methods as a reason for choosing sterilization. And only a small proportion of women (14 percent overall) considered that marital problems had contributed to their decision to be sterilized. Among women who wanted to have another child because of a new relationship, 21 percent claimed that their decision to be sterilized during their earlier union was based partially on problems in that relationship. This finding supports the speculation that a history of marital problems is not the only factor associated with sterilization regret, and suggests that although marital problems can be a contraindication for sterilization, often these problems may arise after or be unrelated to the procedure. Consequently, practitioners should caution all young women about such an eventuality and about the possibility of future regret.

## Satisfaction: A Relative Notion

There are certain problems inherent in any retrospective study that seeks to appraise attitudes toward a past event, particularly when the time that has elapsed since the event varies from one person to another. Such problems arise from the subjective and volatile nature of people's feelings. Even more to the point, people's tendency to rationalize their behavior affects their perception of events.

We asked respondents whether they believed that their sterilization had been appropriately timed and to what degree they were satisfied with their decision to undergo sterilization. Table 5 shows that, overall, 79 percent of respondents said they had chosen the right time to have a tubal ligation, and 12 percent felt that they should have done so earlier. Among women who had never experienced poststerilization regret, 98 percent regarded their timing in a positive light. On the other hand, women who said that they would have had another child if they had not been sterilized were considerably less positive about the timing of their tubal ligation: Almost 24 percent of such women said that they should never have undergone the procedure and 16 percent believed that they should have waited to do it. Nevertheless, 59 percent said that they had chosen the right time to be sterilized despite their subsequent regret. These findings indicate that the majority of women who said they had experienced strong regret still considered that they had done the right thing at the time they underwent the procedure. Further, they suggest that the majority of such women did not remain dissatisfied all the time, nor was their regret so extreme that they sought sterilization reversal. Although at times they regretted their sterilization and would have liked to have another child, such feelings presumably diminished with the passage of time. The same phenomenon may explain their response to the second question: Twenty-nine percent of women who reported having strongly regretted sterilization were completely satisfied with their tubal ligation at the time of interview, and 44 percent were somewhat satisfied.

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*Eighty percent of the women who subsequently questioned the decision to undergo sterilization said that at the time of sterilization they were unconcerned, or only slightly concerned, about being incapable of bearing children in the future.

The groups that cause the greatest concern are the 40 percent of women who experienced strong regret, who believed they should have been sterilized later or never, and the 27 percent of such women who said that they were still dissatisfied with their sterilization. These women remained dissatisfied despite the passage of time. It is important to understand the reasons for their regret in order to prevent such situations from occurring in the future.

## Conclusions

It is clear that for the vast majority of women who undergo tubal ligation, sterilization is a very satisfactory, probably the most satisfactory, contraceptive method available. For the most part, women who are sterilized have given birth to all the children they want to have. Because these women bear their children relatively early in their reproductive life, tubal ligation apparently has all the contraceptive qualities they need—it is effective, permanent and has no major side effects.

However, our results indicate that the permanence of sterilization can become a serious drawback for a substantial proportion of women who undergo the procedure prematurely. If our survey has identified only one determinant of the frequency of regret, we have attained our goal. The analysis of the results clearly shows that the length of exposure to the risk of sterilization regret is a key factor in dissatisfaction. Women who undergo sterilization at too young an age have to face many years without the possibility of having another child, even though their circumstances may change and they may eventually wish to bear more children. It is quite possible that premature recourse to sterilization results from early age at marriage and first birth: Ninety-seven percent of women in our sample who were sterilized before the age of 30 had married before the age of 25, and 40 percent of these latter women had married before the age of 20. Because all of these women formed their families quickly and at relatively young ages, they may have felt pressured to put an end to their childbearing years early, around the age of 30. This profile corresponds to the profile of less-educated women and women who are less interested in working outside the home. The problem is that women who combine these characteristics with a lack of perspective on their future marital lives are the most likely to experience regret.

**Table 5. Percentage distribution of women who had a tubal sterilization, by their perceptions of the appropriateness of the timing of the procedure and their degree of satisfaction with the decision to be sterilized, according to whether they experienced strong poststerilization regret**

| Perception | All women<br>(N=497) | No regret<br>(N=371) | Strong regret<br>(N=63) |
|---|---|---|---|
| **Timing*** | | | |
| Same time | 79.4 | 83.8 | 58.7 |
| Earlier | 11.5 | 14.1 | 1.6 |
| Later | 4.9 | 1.4 | 15.9 |
| Never | 4.3 | 0.8 | 23.8 |
| **Degree of satisfaction†** | | | |
| Very satisfied | 74.6 | 84.1 | 29.0 |
| Somewhat satisfied | 20.3 | 15.1 | 43.5 |
| Somewhat dissatisfied | 2.6 | 0.3 | 16.1 |
| Very dissatisfied | 2.4 | 0.5 | 11.3 |
| Total | 100.0 | 100.0 | 100.0 |

*The question asked was, "Do you believe you should have undergone sterilization earlier, later, at the same time [as you did] or never?"

†The question asked was, "Would you say that today you are very satisfied, somewhat satisfied, somewhat dissatisfied or very dissatisfied with your decision to be sterilized?"

Note: "Timing" and "Degree of satisfaction" differ significantly at $p \leq 0.05$, according to the presence of strong regret or no regret.

Although feelings of regret may be fleeting, they occur far more frequently than physicians' observations would indicate. Perhaps such a radical procedure should not be recommended to young women who do not experience problems with effective contraceptive methods, such as the pill or the IUD, at least until medical research can produce a truly reliable, less damaging and more easily reversible technique of tubal ligation.

At the very least, young women who request sterilization should be advised of the possible consequences of making a premature decision. Such advice is not unwarranted: Between 1977 and 1982, the proportion of Quebec women aged 25–29 who underwent surgical sterilization rose from seven percent to 20 percent.[15] At present, there is no indication that the increasing tendency for young women to undergo sterilization has reached its peak.

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# Public Funding of Family Planning, Sterilization and Abortion Services, 1987

*By Rachel Benson Gold and Sandra Guardado*

**Summary**
In FY 1987, the federal and state governments spent $386 million to provide family planning services. Medicaid was the leading source of public funding, accounting for 36 percent of all public monies spent on family planning. Title X of the Public Health Service Act provided 34 percent of total public funds, and two block-grant programs—Social Services and Maternal and Child Health—together were responsible for 17 percent of public support in this area. State governments, which spent a total of $50 million of their own revenues for family planning services, accounted for the remaining 13 percent of public funding.

The federal and state governments together spent $65 million to subsidize contraceptive sterilization services in FY 1987. The federal government provided 97 percent of the funding, 88 percent through the Medicaid program. In addition, the federal and state governments spent $64 million to provide 189,000 abortions to poor women; less than one percent of these funds were contributed by the federal government.

These data come from a survey of state health, welfare and Medicaid agencies carried out by The Alan Guttmacher Institute and should be viewed as approximations rather than as precise figures.

## Sources of Funds

The federal government funds family planning services through four major channels: Title X of the Public Health Service Act, the Maternal and Child Health (MCH) and Social Services block-grant programs (Titles V and XX of the Social Security Act, respectively), and Medicaid (Title XIX of the Social Security Act). Title X, which is a categorical grant program administered by the DHHS, is the only federal program dedicated specifically to the provision of family planning services.

Under the Title X program, the DHHS awards grants directly to family planning councils, health departments, hospitals and other public and private nonprofit providers of family planning services. In contrast, federal MCH and Social Services block-grant funds are distributed to state health and welfare agencies, respectively, which in turn determine how the funds will be spent. The federal government requires states to match every four federal MCH dollars they receive with three state dollars. The Social Services block grant includes no matching requirement. Although states may use their block-grant allotments to provide family planning services, they are not legally required to do so; each state may determine which services to support and what proportion of its block-grant allotment to use for various services. Further, state agencies may provide services directly or may contract out the provision of services to other agencies.

Unlike the other major federal sources of family planning funds, Medicaid—which is a joint federal-state program developed to provide necessary health services to the very poor—is an entitlement program. Spending is determined by the number of people eligible to receive Medicaid-funded health care services rather than by a direct congressional appropriation. With the exception of Arizona, all states, and the District of Columbia, participate in the Medicaid program. (Arizona has had a demonstration program similar to Medicaid since 1982; that program, however, does not cover family planning services.)

Historically, eligibility for Medicaid was contingent upon eligibility for cash assistance from federal welfare programs. However, as a result of recent (1986) legislation, women who do not meet the income and family structure criteria for cash assistance are eligible for Medicaid as long as they meet certain income criteria. By July 1990, states will have to extend Medicaid coverage to infants and pregnant women with incomes up to the federal poverty level, and will also have the option of covering infants and pregnant women with incomes up to 185 percent of the poverty level. As of July 1988, 40 states have opted to expand their Medicaid programs to cover infants and pregnant women with incomes of 100 percent of poverty or above.[1] This provision should expand the number of women eligible for Medicaid coverage of postpartum family planning services.

The federal government reimburses the states for Medicaid expenditures on the basis of rates set by the DHHS, which assigns each state a "regular" reimbursement rate of 50–80 percent of Medicaid expenditures to cover the cost of most medical services provided under the program. However, family planning services are the only medical services eligible for a special reimbursement rate of nine federal dollars for every 10 state dollars spent. Nevertheless, since the DHHS has never issued a formal definition of the services eligible for the special 90 percent reimbursement rate, they may vary from state to state.

In addition to the monies the federal government provides, most states use some of their own revenues to fund family planning services. State funds can come from a variety of sources, including special appropriations made by legislatures, general assistance programs and general revenues allocated to state welfare or health agencies. Some states use the mechanism of their Medicaid program to provide medical services, such as family planning, to people who do not meet the criteria for federal reimbursement under Medicaid. Services for these people are

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funded entirely with state dollars, and federal reimbursement is not claimed for their care.

## Methodology

For more than a decade, The Alan Guttmacher Institute (AGI) has periodically conducted surveys of state health, welfare and Medicaid agencies to determine their expenditures for family planning services through the four main federal programs as well as through their own state mechanisms. Prior to the present study, which examines such expenditures for FY 1987, the most recent data available were from FY 1985.[2] In January 1988, the AGI mailed questionnaires to every state health agency, welfare agency and Medicaid program requesting information for federal FY 1987 (October 1, 1986–September 30, 1987). Almost every state and the District of Columbia responded to the surveys: Alabama and Wisconsin did not respond to the welfare agency survey; and Alaska, Arizona, Maine and Wisconsin did not respond to the Medicaid survey.* All data reported here were obtained through these surveys, except for the figures on Title X expenditures for family planning services, which were obtained directly from the DHHS. Using DHHS data allows us to enumerate all Title X funds spent in a state, rather than just those grants that are given to state agencies.[3]

The questionnaires for FY 1987 differed in two important respects from those used in previous years. First, the current survey uses a broader definition of family planning services than previous ones, to reflect that such services have become increasingly comprehensive. In the past, state agencies were asked to report expenditures for "contraceptive services and supplies." In contrast, the FY 1987 survey asked them to provide expenditures for "family planning services—consultation (including counseling and patient education); examination and treatment furnished by or under the supervision of a physician or prescribed by a physician; laboratory examination (including Pap smears, VD testing, etc.); and [provision of] medically approved methods, procedures (such as insertion of IUDs, but excluding sterilization), pharmaceutical supplies and devices to prevent conception."

The second major difference is that, in

**Table 1. Reported public expenditures for family planning services (in 000s of dollars), by funding source, according to state, FY 1987**

| State | Total | Federal sources | | | | | | State sources |
|---|---|---|---|---|---|---|---|---|
| | | Total | Medicaid* | Title X† | Social Services block grant* | MCH block grant* | Other federal† | |
| **U.S. total** | **385,985** | **335,977** | **137,798** | **130,725** | **35,259** | **30,973** | **1,222** | **50,008** |
| Ala. | 6,345 | 4,567 | 1,295 | 3,272 | nr | 0 | 0 | 1,778 |
| Alaska | 1,199 | 1,179 | 849‡ | 300 | 0 | 30 | 0 | 20 |
| Ariz. | 3,469 | 3,469 | 0§ | 2,557 | 291 | 621 | 0 | 0 |
| Ark. | 3,431 | 3,115 | 718 | 1,995 | 25 | 234 | 143** | 316 |
| Calif. | 26,980 | 26,953 | 14,448 | 12,505 | 0 | u | 0 | 27 |
| Colo. | 2,941 | 2,002 | 707†† | 1,295 | 0 | 0 | 0 | 939 |
| Conn. | 4,500 | 4,185 | 1,681‡‡ | 1,245 | 1,259 | 0 | 0 | 315§§ |
| Del. | 1,493 | 1,307 | 746 | 561 | u | 0 | 0 | 186 |
| D.C. | 1,977 | 1,799 | 1,090 | 393 | 0 | 316 | 0 | 178 |
| Fla. | 5,430 | 5,420 | 1,320‡‡ | 4,100 | 0 | 0 | 0 | 10 |
| Ga. | 8,619 | 4,860 | 934‡‡ | 3,926 | 0 | 0 | 0 | 3,759 |
| Hawaii | 2,123 | 1,471 | 369 | 1,075 | 0 | 27 | 0 | 652 |
| Idaho | 1,714 | 1,140 | 167 | 604 | 7 | 36 | 0 | 574 |
| Ill. | 21,019 | 20,134 | 9,975*† | 4,031 | 5,085 | 1,043 | 0 | 885*† |
| Ind. | 4,535 | 4,535 | 766 | 2,869 | 0 | 900 | 0 | 0 |
| Iowa | 5,079 | 4,819 | 3,095*‡ | 1,578 | 146 | 0 | 0 | 260 |
| Kans. | 2,106 | 2,045 | 781 | 1,264 | 0 | 0 | 0 | 61 |
| Ky. | 5,915 | 5,622 | 1,857 | 2,911 | 0 | 854 | 0 | 293 |
| La. | 10,508 | 8,006 | 4,987 | 2,455 | u | 564 | 0 | 2,502 |
| Maine | 3,078 | 2,586 | 870*§ | 917 | 799 | 0 | u | 492 |
| Md. | 10,440 | 7,854 | 4,751 | 2,417 | 0 | 686 | 0 | 2,586 |
| Mass. | 4,493 | 4,213 | 584 | 3,488 | 0 | 141 | 0 | 280 |
| Mich. | 14,410 | 12,762 | 8,206 | 3,826 | 0 | 730 | 0 | 1,648 |
| Minn. | 5,896 | 4,766 | 3,117 | 1,649 | 0 | u | 0 | 1,130 |
| Miss. | 6,614 | 6,368 | 2,498*‡ | 2,292 | 1,497 | 81 | 0 | 246 |
| Mo. | 6,591 | 6,591 | 2,640 | 3,165 | 0 | 786 | 0 | 0 |
| Mont. | 1,388 | 1,370 | 363 | 776 | 0 | 29 | 202** | 18 |
| Nebr. | 1,634 | 1,634 | 488 | 942 | 0 | 204 | 0 | 0 |
| Nev. | 1,204 | 1,204 | 323 | 881 | 0 | 0 | 0 | 0 |
| N.H. | 1,436 | 1,349 | 431 | 601 | 317 | 0 | 0 | 87 |
| N.J. | 11,436 | 10,715 | 3,958 | 4,431 | 1,755 | 571 | 0 | 721 |
| N.M. | 2,132 | 2,041 | 742 | 1,202 | 0 | 97 | 0 | 91 |
| N.Y. | 51,168 | 39,268 | 20,011 | 7,953 | 0 | 11,304 | 0 | 11,900 |
| N.C. | 11,121 | 9,515 | 2,548 | 4,145 | 1,642 | 303 | 877*** | 1,606 |
| N.Dak. | 759 | 759 | 222 | 414 | u | 123 | 0 | 0 |
| Ohio | 11,601 | 11,507 | 5,445 | 5,072 | u | 990 | u | 94 |
| Okla. | 9,357 | 5,703 | 3,200††† | 2,110 | 0 | 393 | 0 | 3,654 |
| Oreg. | 3,851 | 3,762 | 2,051‡‡ | 1,711 | 0 | 0 | 0 | 89 |
| Pa. | 19,226 | 19,226 | 6,072††† | 7,242 | 5,020 | 892 | 0 | 0 |
| R.I. | 899 | 870 | 532‡‡‡ | 310 | 28 | 0 | 0 | 29 |
| S.C. | 8,273 | 5,070 | 1,684 | 3,136 | 0 | 250 | 0 | 3,203 |
| S.Dak. | 801 | 801 | 287††† | 374 | 0 | 140 | 0 | 0 |
| Tenn. | 8,810 | 8,023 | 889‡‡ | 4,005 | 2,387 | 742 | 0 | 787 |
| Tex. | 33,302 | 30,996 | 4,670 | 8,580 | 12,468 | 5,278 | 0 | 2,306 |
| Utah | 1,267 | 1,267 | 737‡‡ | 530 | u | u | 0 | 0 |
| Vt. | 1,352 | 1,300 | 722 | 444 | 134 | 0 | 0 | 52 |
| Va. | 8,246 | 6,382 | 2,263 | 2,769 | 1,000 | 350 | 0 | 1,864 |
| Wash. | 8,132 | 5,217 | 2,605 | 2,612 | 0 | 0 | 0 | 2,915 |
| W.Va. | 3,053 | 2,748 | 346‡‡ | 1,221 | 399 | 782 | 0 | 305 |
| Wis. | 14,078 | 12,963 | 8,722§§§ | 2,091 | 1,000**** | 1,150 | 0 | 1,115 |
| Wyo. | 554 | 519 | 36 | 483 | 0 | 0 | 0 | 35*‡ |

*Includes federal and state funds. †Includes federal funds only.

‡No response to Medicaid survey, but some expenditures were reported by the welfare agency.

§Arizona's demonstration Medicaid program does not cover familly planning.

**Funds from the Preventive Health block grant. ††FY 1987 data unavailable; FY 1985 data used.

‡‡Includes funds for sterilization, genetic screening and infertility services.

§§Includes funds for outreach and education.

*†Includes funds for physician fees for sterilization services. *‡Includes funds for sterilization services.

*§No response to Medicaid survey, but some Medicaid expenditures were reported by the health agency.

***Includes funds from Low-Income Energy Assistance Program.

†††Includes funds for genetic screening and infertility services.

‡‡‡Includes funds for outpatient sterilization procedures.

§§§No response to FY 1987 survey; FY 1985 data used.

****No response to welfare agency survey, but some expenditures were reported by the health agency.

Note: In this and following tables, u = unavailable; nr = no response.

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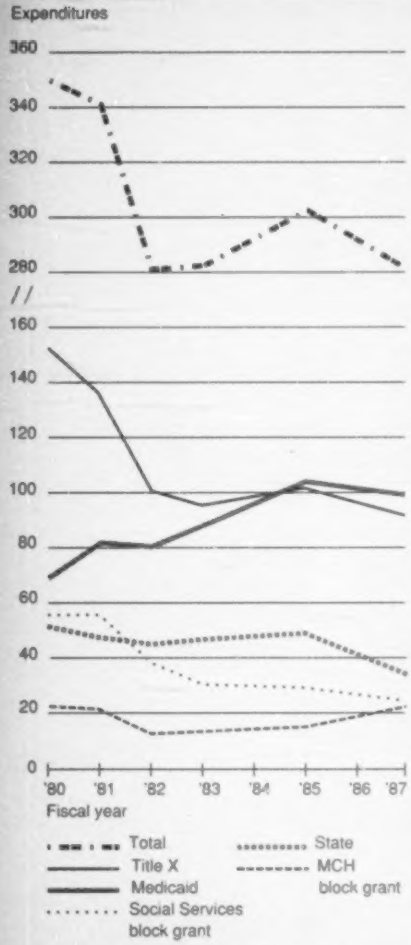
*Data on Medicaid expenditures from FY 1985 were used for the states in which FY 1987 data were unavailable. In two states that did not respond to the Medicaid survey—Alaska and Maine—some Medicaid expenditures were reported by either the state health or the state welfare agency.

**Figure 1. Reported public expenditures for family planning services (in 000s of constant [1980] dollars), by funding source, FY 1980–1987***



*Data for 1980–1985 include family planning expenditures for both family planning services provided to individual patients and related family planning activities; data for 1987 include expenditures for family planning services only.

addition to the question asked in all surveys about expenditures for family planning services provided to individual patients (including contraceptive services and supplies as well as education and counseling), the FY 1987 survey contained a question about expenditures and sources of funds for related family planning activities, such as outreach campaigns, the development of educational materials and special initiatives.* Although this methodology permits a more accurate accounting of expenditures, doing so makes it difficult to compare the data for FY 1987 with those from the earlier surveys, in which the states had often included related family planning activities in their total expenditures for family planning. As a result of this segregation of expenditures for related activities in FY 1987, the amounts spent for family planning services appear to have decreased since FY 1985.

As in previous years, the states were asked to provide separate accounts of expenditures for family planning, contraceptive sterilization, infertility and abortion services. However, it has become increasingly difficult for them to do so. This problem is most acute in the case of Medicaid; for example, whereas virtually every state indicated that Medicaid covered prenatal genetic services and treatment for infertility, nearly all of them included expenditures for these services in the amount spent for family planning. Similarly, 11 states could not isolate expenditures for contraceptive sterilization services from outlays for other family planning services, and included some or all of their sterilization expenditures in the amount spent for family planning services. As a result, Medicaid expenditures for family planning services are overstated in our analysis.

Title X expenditures reported here include funds spent by all Title X grantees in a state, including grantees other than state agencies. While this methodology provides a more accurate expression of the contribution of Title X to total national expenditures on family planning, it also poses some problems. For example, whereas state agencies report using some Title X funds for sterilization services and some for related family planning activities, no data exist on the use of Title X monies for these services and activities by grantees other than state agencies. As a result, the figures reported for Title X family planning expenditures include some funds spent by grantees other than state agencies on either sterilization services or related family planning activities. Consequently, in our analysis, Title X family planning services expenditures are overestimated, and expenditures for sterilization and related services are underestimated.

A last methodological problem arose because federal and state funds cannot always be completely separated. The MCH block grant requires states to match part of the federal expenditures and Medicaid requires the federal government to reimburse the states. In addition, many states match federal Social Services block-grant outlays, even though the federal government does not require them to do so. As has been done in past AGI surveys, the data presented here include these state monies with the federal funds. State expenditures not made specifically to match federal funds have been counted separately. This procedure overestimates the federal expenditure and underestimates state expenditures for family planning.

In recent years, these methodological problems have been compounded by the decrease in accountability that affects programs funded through block grants to the states (compared with categorical programs such as Title X), and by the continuing budget cuts that have affected the DHHS. Consequently, the AGI data presented below, although the most complete summary of public funding available, should be viewed as providing an approximation of general trends rather than a precise accounting.

## Family Planning Services

As Table 1 (page 229) shows, the federal and state governments together spent $386 million for family planning services in FY 1987. Federal funds constituted $336 million, or 87 percent of the total; state funds accounted for $50 million, or 13 percent of the total. Medicaid, the largest source of federal funds for family planning services, provided $138 million; it was responsible for 41 percent of all federal support for such services. Title X was the second-largest source of federal funding, contributing $131 million, or 39 percent of all federal funds. The Social Services block grant provided $35 million, or 10 percent of federal expenditures, and MCH block-grant funds amounted to $31 million, or nine percent of all federal funding.

Every state (except Arizona) and the District of Columbia reported some Medicaid expenditures for family planning in FY 1987. In most cases, the amount reported includes funds spent on infertility and prenatal genetic services; in 11 states, Medicaid expenditures include some or all of the funds spent to provide contraceptive sterilization services. California and New York reported spending more than $10 million each for family planning services through the Medicaid program. All states claimed federal reimbursement at the special 90 percent reimbursement rate for family planning services.

Title X funds were allocated to all 50 states and the District of Columbia. Five states—California, New York, Ohio, Pennsylvania and Texas—received more than $5 million each.

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*Such initiatives include the Colorado Basic Care Program to emphasize the importance of comprehensive family planning services; Maryland's "Three for One" condom distribution program; and Hawaii's special screening program for chlamydia.

Nineteen states reported funding family planning services through their Social Services block grants, and 25 states and the District of Columbia reported no expenditures under this program. (The remaining states were not able to provide data.) As it has every year in the past, Texas reported the largest outlay under the Social Services block grant, an expenditure amounting to 35 percent of the national total for this program.

Thirty-one states and the District of Columbia together spent $31 million in federal MCH block-grant funds. New York alone spent $11 million. Three states reported expenditures from other federal sources: Arkansas and Montana spent $143,000 and $202,000, respectively, from the Preventive Health block grant, and North Carolina spent $877,000 from its federally funded Low-Income Energy Assistance Program.

Forty-one states and the District of Columbia reported spending a total of $50 million in state funds for family planning services. New York spent $12 million of its own revenues. In all, 14 states used more than $1 million of their own funds.

In addition to the funds used for family planning services provided to individual patients, 31 states reported spending a total of $12 million for related family planning activities such as outreach and education (not shown). Thirty-nine percent of the funds for these activities, or about $5 million, were supplied by the federal government. Sixteen states used some Title X funds for related family planning activities. Five states together spent $3.3 million through their Social Services block grants; New York alone accounted for $3 million of this total. Nine states spent a total of $185,000 through their MCH block grants, and one—Connecticut—spent $20,000 from its federal Community Services block-grant allotment.

Sixty-one percent of the total expenditures for related family planning activities were supplied by state revenues. Together, 11 states spent about $7 million of their own funds in this area. Four states—California, Maryland, Michigan and New York— each spent more than $500,000 of their own revenues. California, which spent $4 million of its own monies, accounted for 54 percent of all state expenditures for related family planning activities.

## Funding Trends

Figure 1 displays the changes in expenditures that have occurred since 1980; funding levels are expressed in constant (1980) dollars to adjust for the effects of inflation.

**Table 2. Reported expenditures for sterilizations, in 000s of dollars, by funding source, according to state, FY 1987**

| State | Total | Federal sources | | | | | | State sources |
|---|---|---|---|---|---|---|---|---|
| | | Total | Medicaid* | Title X† | Social Services block grant* | MCH block grant* | Other federal† | |
| **U.S. total** | **64,728** | **62,556** | **56,857** | **2,063** | **2,791** | **839** | **6** | **2,172** |
| Ala. | 2,059 | 2,059 | 2,035 | 24 | u | 0 | 0 | 0 |
| Alaska | nr | nr | nr | 0 | u | 0 | 0 | 0 |
| Ariz. | 0§ | 0‡ | 0‡ | 0 | 0 | 0 | 0 | 0 |
| Ark. | 990 | 989 | 975 | 8 | u | 0 | 6§ | 1 |
| Calif. | 2,526 | 2,526 | 2,526** | u | 0 | u | 0 | u |
| Colo. | 88 | 17 | 17 | 0 | 0 | 0 | 0 | 71 |
| Conn. | u | u | u | 0 | 0 | 0 | 0 | 0 |
| Del. | 295 | 295 | 295 | 0 | u | 0 | 0 | u |
| D.C. | 62 | 62 | 62 | u | 0 | u | 0 | 0 |
| Fla. | 808 | 808 | u | 808 | 0 | 0 | 0 | 0 |
| Ga. | 50 | 50 | u | 50 | 0 | 0 | 0 | 0 |
| Hawaii | 445 | 441 | 441 | 0 | 0 | 0 | 0 | 4 |
| Idaho | 252 | 252 | 157 | 95 | 0 | 0 | 0 | 0 |
| Ill. | 2,070 | 1,686 | 1,676†† | 10 | 0 | 0 | 0 | 384†† |
| Ind. | 4,585 | 4,585 | 4,585 | 0 | 0 | 0 | 0 | 0 |
| Iowa | 19 | 19 | u | 19 | 0 | 0 | 0 | 0 |
| Kans. | 530 | 514 | 514 | 0 | 0 | 0 | 0 | 16 |
| Ky. | 1,488 | 1,404 | 1,259 | 145 | 0 | 0 | 0 | 84 |
| La. | 4,587 | 4,575 | 4,565 | 8 | 0 | 2 | 0 | 12 |
| Maine | nr | nr | nr | 0 | 0 | 0 | 0 | 0 |
| Md. | 1,568 | 1,443 | 1,441 | 2 | 0 | 0 | 0 | 125 |
| Mass. | 509 | 509 | 509 | 0 | 0 | 0 | 0 | 0 |
| Mich. | 3,635 | 3,635 | 3,625 | 10‡‡ | u | u | u | u |
| Minn. | 455 | 455 | 455 | 0 | 0 | 0 | 0 | u |
| Miss. | 664 | 664 | u | 664 | 0 | 0 | 0 | 0 |
| Mo. | 616 | 616 | 616 | 0 | 0 | 0 | 0 | 0 |
| Mont. | 144 | 140 | 137 | 3 | 0 | 0 | 0 | 4 |
| Nebr. | 250 | 250 | 250 | 0 | 0 | 0 | 0 | 0 |
| Nev. | 216 | 216 | 216 | 0 | 0 | 0 | 0 | 0 |
| N.H. | 49 | 49 | 49 | u | u | u | u | u |
| N.J. | 1,921 | 1,895 | 1,895 | u | 0 | u | 0 | 26 |
| N.Mex. | 1,028 | 1,028 | 948 | 78 | 0 | 2 | 0 | 0 |
| N.Y. | 3,788 | 3,505 | 3,505 | 0 | 0 | 0 | 0 | 283 |
| N.C. | 3,027 | 2,967 | 2,390 | 33 | 544 | 0 | 0 | 60 |
| N.Dak. | 192 | 192 | 188 | 4§§ | 0 | u | u | u |
| Ohio | 3,399 | 3,399 | 3,399 | u | u | u | u | 0 |
| Okla. | 259 | 250 | 250 | 0 | 0 | 0 | 0 | 9 |
| Oreg. | u | u | u | 0 | 0 | 0 | 0 | u |
| Pa. | 8,428 | 8,428 | 8,428 | 0 | 0 | 0 | 0 | 0 |
| R.I. | 140 | 140 | 140*† | 0 | 0 | 0 | 0 | 0 |
| S.C. | 1,652 | 1,652 | 1,353 | 64 | 0 | 235 | 0 | 0 |
| S.Dak. | 139 | 139 | 115 | 24 | 0 | 0 | 0 | 0 |
| Tenn. | 14 | 14 | u | 14*‡ | 0 | 0 | 0 | u |
| Tex. | 7,846 | 7,577 | 5,330 | u | 2,247 | u | 0 | 269 |
| Utah | u | u | u | 0 | u | 0 | 0 | 0 |
| Vt. | 298 | 298 | 298 | 0 | u | 0 | 0 | 0 |
| Va. | 1,537 | 854 | 854 | 0 | 0 | 0 | 0 | 683 |
| Wash. | 1,237 | 1,096 | 1,096 | 0 | 0 | 0 | 0 | 141 |
| W.Va. | 600 | 600 | u | 0 | u | 600 | 0 | 0 |
| Wis. | nr | nr | nr | 0 | nr | 0 | 0 | 0 |
| Wyo. | 263 | 263 | 263 | 0 | 0 | 0 | 0 | u |

*Includes federal and state funds. †Includes federal funds only.

‡Arizona's demonstration Medicaid program does not cover contraceptive sterilization services.

§Funds from the Preventive Health block grant.

**Includes Title X, MCH and state funds.

††Includes funds for hospital fees only for sterilizations (physician fees excluded).

‡‡Includes MCH and Social Services block grants and other state and federal funds.

§§Includes MCH, state and other federal funds. *†Includes funds for inpatient sterilization procedures only.

*‡Includes some state funds.

**Table 3. Reported public expenditures for abortions (in 000s of dollars) and number of publicly funded abortions, by funding source, according to state and state policy, FY 1987**

| State and state policy | Expenditures | | | No. of abortions | | |
|---|---|---|---|---|---|---|
| | Total | Federal | State | Total | Federal | State |
| **U.S. total** | **64,273** | **160** | **64,113** | **189,241** | **322** | **188,919** |
| NONRESTRICTIVE | 63,993 | 16 | 63,977 | 188,389 | 10 | 188,379 |
| **Voluntary** | **22,145** | **13** | **22,132** | **71,951** | **5** | **71,946** |
| Alaska | 375 | 0 | 375 | 300 | 0 | 300* |
| D.C. | 864 | 0 | 864† | 4,421 | 0 | 4,421 |
| Hawaii | 970 | 0 | 970 | u | 0 | u |
| Maryland | 1,391 | 0 | 1,391 | 2,642 | 0 | 2,642 |
| New York | 15,218 | 0 | 15,218 | 53,495 | 0 | 53,495 |
| North Carolina | 921 | 13 | 908 | 4,205 | 5 | 4,200 |
| Oregon | 301 | 0 | 301 | 1,376 | 0 | 1,376 |
| Washington | 2,040 | 0 | 2,040 | 5,093 | 0 | 5,093** |
| West Virginia | 65 | 0 | 65 | 419 | 0 | 419 |
| **Court order** | **41,848** | **3** | **41,845** | **116,438** | **5** | **116,433** |
| California | 27,566 | 0 | 27,566 | 77,000 | 0 | 77,000 |
| Connecticut | 871 | 1 | 870 | 2,950 | 2 | 2,948 |
| Massachusetts | 1,550 | 0 | 1,550 | 5,800 | 0 | 5,800 |
| Michigan | 6,351 | 0 | 6,351‡ | 20,000 | 0 | 20,000 |
| New Jersey | 5,461 | 0 | 5,461 | 10,422 | 0 | 10,422 |
| Vermont | 49 | 2 | 47 | 266 | 3 | 263 |
| RESTRICTIVE | 280 | 144 | 136 | 852 | 312 | 540 |
| **Life-only** | **125** | **125** | **0** | **296** | **296** | **0** |
| Alabama | 2 | 2 | 0 | 7 | 7 | 0 |
| Arizona § | 0 | 0 | 0 | 0 | 0 | 0 |
| Arkansas | 1 | 1 | 0 | 2 | 2 | 0 |
| Delaware | 1 | 1 | 0 | 3 | 3 | 0 |
| Florida | 5 | 5 | 0 | 56 | 56 | 0 |
| Georgia | 11 | 11 | 0 | 5 | 5 | 0 |
| Idaho | 1 | 1 | 0 | 2 | 2 | 0 |
| Illinois | ** | ** | 0 | 2 | 2 | 0 |
| Indiana | 0 | 0 | 0 | 0 | 0 | 0 |
| Kansas | ** | ** | 0 | 1 | 1 | 0 |
| Kentucky | 0 | 0 | 0 | 0 | 0 | 0 |
| Louisiana | 4 | 4 | 0 | 5 | 5 | 0 |
| Maine | nr | nr | nr | nr | nr | nr |
| Mississippi | 0 | 0 | 0 | 0 | 0 | 0 |
| Missouri | 0 | 0 | 0 | 0 | 0 | 0 |
| Montana | ** | ** | 0 | 1 | 1 | 0 |
| Nebraska | 0 | 0 | 0 | 0 | 0 | 0 |
| Nevada | 0 | 0 | 0 | 0 | 0 | 0 |
| New Hampshire | 0 | 0 | 0 | 0 | 0 | 0 |
| New Mexico | u | u | 0 | 1 | 1 | 0 |
| North Dakota | 0 | 0 | 0 | 0 | 0 | 0 |
| Ohio | u | u | 0 | u | u | 0 |
| Oklahoma | 0 | 0 | 0 | 0 | 0 | 0 |
| Rhode Island | 0 | 0 | 0 | 0 | 0 | 0 |
| South Carolina | 3 | 3 | 0 | 8 | 8 | 0 |
| South Dakota | 0 | 0 | 0 | 0 | 0 | 0 |
| Tennessee | 10 | 10 | 0 | 4 | 4 | 0 |
| Texas | 87 | 87 | 0 | 199 | 199†† | 0 |
| Utah | 0 | 0 | 0 | 0 | 0 | 0 |
| **Other restrictions** | **155** | **19** | **136** | **556** | **16** | **540** |
| Colorado | 1 | 1 | 0 | 4 | 4 | 0 |
| Iowa | 17 | 14 | 3 | 10 | 4 | 6 |
| Minnesota | ** | ** | 0 | 2 | 2 | 0 |
| Pennsylvania | 104 | 0 | 104 | 478 | 0 | 478 |
| Virginia | 33 | 4 | 29 | 62 | 6 | 56 |
| Wisconsin | nr | nr | nr | nr | nr | nr |
| Wyoming | 0 | 0 | 0 | 0 | 0 | 0 |

*Based on an approximate count.

†Includes funds for outpatient costs only.

‡Based on FY 1985 expenditures for 20,620 abortions.

§Arizona's demonstration Medicaid program does not cover abortions.

**Less than $500

††Includes funds for services following miscarriages.

In FY 1987, total public expenditures for family planning services fell for the first time since the early days of the Reagan administration, when the budgets for all federally funded health programs were cut drastically. Between 1985 and 1987, expenditures dropped among all public sources of support for family planning services except the MCH block grant. The apparent magnitude of the decline is likely due in large part to modifications in the way the data were collected by the AGI, as well as to actual changes in funding levels. Unfortunately, it is not possible to determine the amount of the decline due to each of these two factors.

After rising 29 percent between FY 1981 and FY 1985, Medicaid expenditures show a slight decrease between FY 1985 and FY 1987. Changes in state systems made to increase the efficiency and accuracy of the reporting of Medicaid expenditures may have helped to eliminate any non–family planning expenditures that had inadvertantly been claimed at the special 90 percent reimbursement rate for family planning. In addition, one very populous state, Ohio, indicated that flaws in its data system had led to an overestimation of expenditures for family planning services in past years; consequently, Ohio claimed nearly $10 million less in Medicaid expenditures for family planning in FY 1987 than it had two years earlier.

Funding through Title X, the Social Services block-grant program and the states also show decreases between FY 1985 and FY 1987, largely because of the separation of expenditures for related family planning activities from those for family planning services provided to individual patients. State revenues used for family planning services fell the most dramatically; even if expenditures for related activities were added to expenditures for family planning services in FY 1987, total state outlays for family planning would show a decline in both actual and constant dollars. On the other hand, if expenditures for both family planning services and related activities were added together, FY 1987 outlays made by Title X and the Social Services block-grant program would appear unchanged in current dollars, but down slightly in constant dollars.

### Sterilization Services

Since 1979, federal regulations have placed strict limits on sterilizations funded by the DHHS. The regulations require a detailed and complex informed consent procedure, mandate a 30-day waiting period between the time a woman gives her consent and the date her sterilization is performed, and prohibit the sterilization of anyone who is under age 21 or mentally incompetent.[4]

As Table 2 (page 231) shows, the states and the federal government together spent $65 million to provide contraceptive sterilization services in FY 1987. The federal government spent $63 million, or 97 percent of all public funds allocated to such services. Eight states reported total public expenditures of more than $3 million; Pennsylvania and Texas each reported expenditures of more than $7 million.

In FY 1987, $57 million, or 91 percent of all federal sterilization funds were provided by Medicaid. Thirty-seven states and the District of Columbia reported Medicaid expenditures; Arizona was the only state to report no such expenditures, and some states either did not respond to the survey or could not provide data on outlays for sterilizations. Although North Carolina and Texas were the only states that reported using Social Services block-grant funds for sterilization, together they spent $3 million through this program, making it the second-largest source of federal funds for sterilization. Title X was the third-largest source; 19 states spent a total of $2 million in such funds. Four states—Louisiana, New Mexico, South Carolina and West Virginia—used MCH block-grant funds for contraceptive sterilizations; West Virginia alone accounted for $600,000 of a total of $839,000 in such funds. In addition, Arkansas spent $6,000 in funds from the federal Preventive Health block grant.

Sixteen states reported using their own revenues for contraceptive sterilization services. Of these, Virginia and Illinois reported the greatest outlays, even though the amount reported for Illinois includes only hospital fees and not physician fees. Six states—Illinois, Maryland, New York, Texas, Virginia and Washington—each spent more than $100,000 in state funds.

### Abortion Services

The implementation of the Hyde Amendment in 1977 virtually eliminated federal funding for abortion services. Since 1981, federal funds have been available for abortions only in cases where the life of the woman would be endangered if her pregnancy were carried to term. For several years, supporters of abortion rights have been attempting to expand this standard to include federal funding for abortion in cases of rape and incest. Although the Senate approved such an expansion this year, the House of Representatives objected; consequently, the provision was not enacted.

The federal government funded only 322 abortions in FY 1987 (see Table 3), down from 484 in FY 1985.[5] Although Texas claimed federal reimbursement for 199 abortions, its Medicaid agency indicated that this figure includes some services following miscarriages for which federal reimbursement was claimed. (The AGI asked state Medicaid agencies for information on the rates they use to reimburse providers for a first-trimester abortion performed in a clinic. In the 17 states that responded to this question, rates ranged from a low of $60 in Pennsylvania to a high of $400 in Georgia; 10 reported rates of under $150.)

Sixteen states and the District of Columbia reported spending a total of $64 million of their own state revenues to provide 188,919 abortions to indigent women in FY 1987. Almost all of these abortions (188,379) were performed in jurisdictions that continued to fund all medically necessary abortions for poor women in FY 1987 (14 states and the District of Columbia).* As Table 3 shows, eight states and the District of Columbia have adopted this funding policy voluntarily, while six states have been ordered by their state courts to pay for all medically necessary abortions.

The remaining 540 state-funded abortions were reported by states that have placed funding restrictions on abortion services. In all, seven states have established their own funding restrictions: Minnesota, Pennsylvania, Wisconsin and Wyoming have policies permitting them to pay for abortions in cases of life endangerment, rape or incest; Iowa and Virginia fund abortions in cases of life endangerment, rape, incest and diagnosed severe fetal defect; and Colorado has a policy, established by a statewide referendum in 1984, of paying for abortions only in cases of life endangerment, fetal defect or a "psychiatric condition which represents a serious and substantial threat to the life of the pregnant woman."[6] None of the 29 states that have adopted a "life-only" policy similar to the federal government's used state revenues for abortion services.

The abortion funding policy of the District of Columbia changed abruptly on October 1, 1988, as a result of congressional action. An amendment added to annual appropriations legislation prohibits the District from using its own, locally raised revenues for abortion except in cases of life endangerment. In addition, the abortion funding policies in two states may change after the November 1988 elections. Colorado will hold a statewide referendum asking voters to reinstate public funding for all medically necessary abortions. The Michigan electorate will be asked to vote on overturning a restrictive abortion policy adopted by the state legislature (but never implemented) last year; because the courts stayed this legislative action, the state can continue to fund all medically necessary abortions until the referendum.

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4. *Federal Register*, **43**:52146, Washington, D.C., 1978.

5. R. B. Gold and J. Macias, 1986, op. cit. (see reference 2).

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*Most of these jurisdictions use the definition of "medically necessary" set forth in the Supreme Court's 1973 abortion decisions. According to these decisions, a medically necessary abortion is "one that is required in light of all factors—physical, emotional, psychological, familial and the woman's age—relevant to the wellbeing of the patient."

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*(Continued from page 221)*

This research did not address the issue of causation regarding sterilization beliefs and sterilization intentions. Although it is likely that beliefs about specific outcomes of sterilization do help shape a woman's decision, it is also possible that once a decision to be sterilized has been made, beliefs that are compatible with the decision subsequently develop. This is a question to be addressed in future research. Nevertheless, this analysis does provide important descriptive data useful to health care providers, counselors and researchers alike.

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# Comment

## Title X and Family Planning Services for Men

*By Ross Danielson, Kevin McNally, Janice Swanson, Anne Plunkett and Walter Klausmeier*

### Introduction

The role of men as targets of family planning services varies greatly within the federally supported family planning services system.[*] While some family planning agencies exclusively serve women, most offer some services to men as well. Such services may include condom distribution, sterilization, sexually transmitted disease screening and treatment and general education. The topic of men and family planning poses questions for all levels of the family planning enterprise

Everyone recognizes the male role in the biosocial context of family planning, but what, if any, services for men do agencies want to provide? How should these services be provided? What resources should be allocated for this purpose? National policy and administrative actions are an important part of the answer, but also create more questions: How do the current federal policies and administration of the Title X family planning program—the second most important source—promote or constrain the delivery of such services to men? Are there changes in Title X policy or administration that could encourage greater participation of men in family planning?

To attempt to answer these questions, we examined the viewpoints of family planning administrators employed at different levels of the Title X program. In this article, we present an overview of their opinions, followed by our analysis and recommendations.

The Title X family planning program is administered nationally through the Office of Family Planning in the Department of Health and Human Services and through offices in the 10 federal public health service regions. Ninety-five percent of the Title X budget is designated for standard family planning services. Recipients of the funds in each region include state agencies (in some cases), intermediary grantees (such as a council of family planning providers) and family planning clinics. Through these institutions Title X supports a diversity of projects. Although Title X funds have been used to serve men, the program was primarily designed to address the unmet family planning needs of women.[1] Accordingly, the national formulas used to allocate Title X funds to the federal administrative regions have been derived primarily from the number of women in need and the number of women in need served in the previous funding period; no specific consideration has been given to men.

Since 1982, the Title X administration has excluded the tally of services provided to men from its national data collection. Sections of the reporting forms that had previously requested data on men are now blacked out. The reporting-form categories that request the number of total client encounters do not explicitly exclude men, but it appears that men are generally not included. National Title X administrators have argued that the exclusion of men from statistical reporting is justified by the small number of men served and by the belief that services to men are often peripheral to those provided to women.[2]

Nevertheless, the national Title X administration has promoted the involvement of men in family planning services in various ways. One important way has been the inclusion, since 1984, of male-oriented service projects in the list of areas accorded priority status. (The Office of Family Planning designates the national priorities for funding purposes, and the first $500,000 allocated to each federal region is then supposed to be reserved for grants to fund those priorities.) However, some regions had not yet supported male projects under this mechanism when the potential impact of a priority designation was weakened by a federal directive in 1986 that made the funding of priority projects optional. The weakening of the priority designation probably reflects the great demand for standard services within a limited Title X budget—the overall appropriation to Title X (excluding federal administrative personnel) dropped from $161.7 million in 1981 to $142.5 million in 1982 and $136.4 million for 1988. The overall funding level for Title X, which has never been perceived as sufficient for the needs of women, has no doubt influenced the way many regard proposals to expand services aimed at men.

In addition to the national priority designation, other provisions that could be used to serve men include funds reserved for training (2.6 percent of Title X's 1987

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[*] The diversity of this experience is reflected in three resource guides now available: D. Beckstein, *Annotated Guide to Men's Sexual and Reproductive Health Resources*, MRH Publications, Capitola, Calif., 1987; ——, *Men's Reproductive Health Program Reports and Directory*, MRH Publications, Capitola, Calif., 1987; and State Family Planning Administrators 1987–1988 Planning Committee, *Male Involvement in Family Planning: A Bibliography of Project Descriptions and Resources*, Center for Health Training, Seattle, 1988. For an excellent review of efforts and policy related to adolescent men, see: J. G. Dryfoos, *Putting the Boys in the Picture*, Network Publications, Santa Cruz, Calif., 1988 (forthcoming).

budget), research and technical assistance (1.3 percent of the 1987 budget), information and education (0.3 percent of the 1987 budget) and evaluation (0.4 percent of the 1987 budget).[3]

### Interviews with Program Personnel

To get a sense of opinions about the role of Title X policy and administration in the delivery of family planning services to men, we interviewed 49 people of various ranks within the Title X family planning services system—including several administrators from the Office of Family Planning—between August and October 1987. In each of the 10 regions, we interviewed at least one member from the regional office staff, a state-level program administrator, a representative of a Title X intermediary grantee and family planning clinic personnel. The names of personnel in agencies that receive Title X funds were provided by the regional- and state-level administrators. We expressed particular interest in speaking to staff in clinics that had a special interest in male-aimed services, as well as to those in clinics that had no known record of interest.

We structured the interviews around eight key questions. The responses of the informants are summarized as follows:

*1. Has the fact that men are not enumerated in the federal report inhibited the willingness or ability of your agency to serve men?*

More than half of those interviewed said that the reporting exclusion did interfere, one-quarter did not consider it to interfere, and the remainder were ambivalent. Many of those who considered the reporting mechanism to have had a deterring effect worked for organizations that already had substantial interest in male-oriented activities. Most agreed that the enumeration of male-aimed services would act as an incentive to offer more services or to offer them more aggressively. Some informants noted that exclusion of male clients from accounting especially discouraged the provision of clinical services for men, particularly male sterilization. In some agencies that provided these services, poor men were considered to be those most affected because of the greater resources needed to reach them. Several others agreed that the exclusion of men from the statistics make it more likely that male-aimed services will be eliminated first in times of budget difficulties. Some believed that the exclusion of men from routine reporting and funding served to reinforce the view of some staff that the sole purpose of Title X was to serve women.

The exclusion of men from allocation formulas also was seen as contributing to a popular belief that suggests that providing services to men would result in the denial of services to some women. A few informants thus blamed allocation methods for their agency's discontinuation of well-liked programs directed at men.

Some of the respondents who did not find the reporting and allocation methods problematic worked in agencies with active programs for men. As one interviewee proudly said, "We haven't [been] hurt because we are really committed to male services." However, most of these agencies provided educational services to men, which "wouldn't count [on the reporting form] anyway," rather than the clinical services that would count. These clinics seemed to have alternative sources of funding that rendered the federal mechanism inconsequential.

Other informants who were untroubled by federal allocation and reporting methods were from regions or states where the application of federal formulas had somehow been made very confusing or was perceived as irrelevant to grantees and clinical staff. A few respondents said that the federal reporting procedures did not affect them because their agency or region had found its own way to count men and the services provided to them. Some respondents were emphatic in saying that enumeration difficulties were irrelevant but that other barriers to services for men did arise.

*2. Has the lack of federal funding for male-oriented programs prevented you from initiating, continuing or expanding services for men that you would otherwise like to provide?*

About three-quarters of the informants agreed that the lack of funding has had such an effect, while fewer than one-fifth did not take that view and the remainder were ambivalent Some respondents said that they would restore previously discontinued services, especially clinical ones, should funding be provided. Funding, said one informant, would allow a "full-blown program" instead of a program of half-measures. A respondent from an agency that had enthusiastically begun a privately supported program aimed at men noted that the agency was already concerned about its ability to sustain the program beyond the pilot phase.

Those who perceived the lack of funding to be an unimportant constraint offered diverse reasons for their position. One interviewee found his existing funds sufficient to provide education and counseling services and free condoms, and did not envision doing more. One noted that in his state, nobody had ever applied for the special male-aimed funds that had been available. Other interviewees expressed pessimism both about the willingness of their agency or staff to utilize new funds for male-targeted services, as well as about the agency's ability to actually reach a sufficient number of men.

*3. In order to initiate or expand male-oriented services, would you need funds specifically for a male program, or would you like to see the funds for these services incorporated into your overall funding level (assuming that the total funding is adequate)?*

The weight of opinion, shared by over half of the interviewees, favored the incorporation of support for male services into the overall funding; a little more than one-third favored specific funds and the remainder were ambivalent. However, the responses highlight the strengths and weaknesses of the two approaches. Incorporating funds for male services into general support was considered to be a more stable mechanism. Consolidated funds were perceived as easier to administer, permitting more complete integration of male services within a clinic and allowing more flexibility in how the money would be spent. Several of those interviewed emphasized budget flexibility, and preferred a funding approach with the fewest possible strings attached. Many believed that special funding would give the programs a temporary status. One respondent argued that agencies that were committed to serving men were forced to depend on numerous applications for special Title X project grants and for state and private monies; because of this process, funding for male services tended to be chronically unstable and an administrative hassle, and also tended to be perceived as marginal to the agency. Nonetheless, many advocates of incorporated funds saw the value of having special funding to stimulate development of such programs as outreach and training. Many expressed support for the designation of funds for national priority efforts.

Among informants who preferred targeted funding, the majority emphasized its role as an incentive. One informant said that targeted funds were necessary in order for men "to get their fair share." In particular, the informants felt that some family planning providers would never develop male-oriented programming unless induced by dollars specifically earmarked for that purpose, because otherwise "men would not be [the] first priority." One supporter of special funding said that targeted funds were necessary because "total funding somehow never seems adequate." Lastly, in support of targeted funding, one informant suggested that money from general funds intended to benefit men would be "siphoned off" to services for women. However, just as some of those who favored incorporating funds for male services into the total budget also welcomed special program-specific funding, there were those in favor of special funding who also saw the value of general funding. Two informants, for example, said that while targeted approaches for male services were immediately required to help initiate efforts, the continuation of these efforts would depend on their potential support from routine overall funding.

*4. Besides funding mechanisms, are there any Title X regulations or other federal administrative policies or actions that have prevented or hampered your efforts to provide services for men?*

One informant commented that the government's attempts to implement parental notification requirements and various antiabortion directives had impaired expansion of efforts directed toward men. The pervasive sense of being under siege reported by the respondents, along with inadequate funding, had diminished the ability and desire to create any new programs, including those for men.

*5. Have the people in the regional office been supportive of, indifferent to or hostile toward your ideas or efforts to provide services for men?*

In some cases, the informants were familiar with the attitudes of the state leadership, which they considered to be part of the regional Title X administration. However, when we combined the opinions expressed about the leadership at both the state and regional levels, we found that half of the informants considered the administrators to be supportive, and roughly half either had no opinion or believed the administration to be indifferent; only one informant considered the regional administration to be hostile to male issues.

It is quite clear that many state and regional administrators have been very supportive, while the interest and support of others have fluctuated. A number of the interviewees apparently viewed the encouragement they had received from administrators to respond to special program initiatives as evidence of support. Some informants believed that regional and state administrators have been constrained by federal ambivalence and the lack of adequate models or well-developed guidelines.

*6. Has the region supported any training in the delivery of family planning services to men? Would you like it to provide more?*

Three-quarters of the informants acknowledged that training had been provided; instruction had been offered in all but one region. Almost three-quarters of those who were asked indicated that they wanted more training; however there was no agreement on the type required. The training need most often specified was that of teaching nurse practitioners methods of providing clinical services to men, especially routine physical examinations and diagnosis of sexually transmitted diseases. One interviewee noted that training manuals and protocols in these areas were lacking. Training in new approaches to involving men was also desired. The need for funds was mentioned by some informants—not only to make training available, but also to support attendance by personnel. While one regional administrator complained that there was little demand for training for delivery of family planning services to men, agency personnel explained that they had not requested it because they knew that funds for training were insufficient.

*7. Aside from what we have discussed, are there other federal policies or actions that you would recommend for improving family planning services for men?*

Of the 20 interviewees who had a response to this question, several reiterated the need for a national project on men. Community education efforts and outreach aimed at men were critical concerns; some informants mentioned that these types of efforts should include young boys. Provision of sex education in the schools and the creation of school health clinics were also cited as ways to reach young men. More integration of family planning programs with other primary care services was also recommended. The informants urged support for more federal research, including studies that would compare the effectiveness of a strong couple-focused program with that of a traditional family planning program.

*8. Finally, are there any other things you would like to mention that discourage the provision of family planning services for men?*

This question generated an avalanche of opinion, most of which centered on one theme—the perceived female orientation of Title X. As some informants noted, the biggest problems are the "mind-set of a female-centered program" and the "attitude that men should not be involved in the field in any way." Respondents in all 10 regions considered the female focus to be manifest in the philosophy, staffing and image of family planning programs. Philosophical or ideological resistance of the staff to the idea of serving men was considered so extreme in one agency that it provoked one respondent to say flatly that "nothing would encourage [the creation of] male programs here." Another informant raised an obviously important point in saying that many female clients appear to prefer, if not demand, an exclusively female-focused facility—a conclusion supported by a survey of his clinic's clients. Another noted that in clinics that cannot meet the demands of their female clientele, there is little incentive to provide services to men.

Equal mention was made of the predominantly female staffs found in family planning organizations—an independent concern, but one that is relevant to an exclusivist philosophy. It was suggested that efforts be made to include male staff members in each clinic. These concerns also found their echo when training needs were mentioned. Staff resistance to the concept of male involvement in family planning, explained one informant, is the result of discomfort arising from a lack of experience and training in serving this population. Other informants noted a need to employ or contract with people who had the necessary training and skills. Informants also mentioned the public image, the decor and the waiting-room reading material of family planning clinics as evidence of their female focus.

## Discussion and Recommendations

We strongly recommend that the routine reporting and allocation procedures under Title X be revised to include men. Enumeration of the men served—the symbolic value of which cannot be sufficiently emphasized—should be the first objective, and incorporation of these statistics into the formulas for routine allocation of funds should be the second objective. We believe that the interviews support the expectation that such changes would improve the environment for local agency efforts and regional initiatives. Such changes are unlikely to cause undue pressure on those institutions that choose to exclude or to only minimally include services for men.

We agree with most of the respondents

who thought that funding for the male role in family planning should be incorporated into the overall Title X funding as the best way to *institutionalize* a male component in the program. It also seems clear that targeted funding and approaches, such as the priority designation of services for men, should be retained and promoted. But we believe that the incorporation of successful and new initiatives into routine family planning operations would be greatly enhanced by their recognition in overall reporting and allocations. Funds should be allocated for carefully selected projects, especially those that create practical service models or materials useful in other settings and for agencies previously uninvolved in male services.

New services for men would require a modest funding increase—an increment which would best be determined by regional administrators in consultation with current grantees. Meanwhile, proponents of male services should join other family planning advocates in demanding a substantial increase of the Title X budget. Such an increase in overall funding would be helpful in allaying fears that male-aimed efforts would compete with female-oriented services for funding. We do not believe, however, that the changes called for in reporting and allocation should await the availability of new or increased funds—there will always be a perceived shortage of funding. The involvement of men in family planning is too important an issue to be constrained by lack of increased overall funding.

A national initiative aimed at men should be carefully planned to avoid wasteful false starts. Its capacity to motivate and sustain grantee agencies in providing services for men would be greatly enhanced if it were to be combined with a revision of Title X reporting and allocation procedures. Male involvement in family planning was the theme of this year's annual meeting of state family planning administrators; the meeting, funded with Title X training monies, is an example of a well-designed attempt to heighten awareness of the issue throughout the family planning enterprise.

Training programs should be supported that provide highly specific and technical instruction on male services and that facilitate clinic initiation of such services. And training should be made available that could otherwise assist clinics in enlarging their spectrum of services—in particular, the treatment and prevention of sexually transmitted diseases and AIDS, and related education activities.

The ways in which Services Delivery Improvement (SDI) and information and education funds are being used should be carefully reviewed to find opportunities to address men's involvement in family planning. Research should be supported that is designed to evaluate a small number of experiments on alternative approaches to providing family planning services to men, both as individuals and as members of couples. Regional administrators should consider using evaluation funds to support applied research on the effectiveness of programs directed at men. Descriptive case studies of male involvement projects or methods may be useful at this stage. And policy research is needed that explores the separate issue of integrating family planning with other health services.

Attention should be given to regional and local strategies to use Title X funds to support services to its targeted populations, some of which are also served by other community settings, such as schools, workplaces, other medical care providers and health maintenance organizations. Regions should welcome proposals for local projects in which family planning agencies take a lead role in collaborating with other institutions to provide services. However, Title X providers should be modest in their expectations, especially that of recruiting male patients into existing settings. Our interviews and other reports would argue for caution against premature overinvestment and unrealistic expectations—modest ventures may be more cost-effective and successful in the long run.[4]

The recommended changes in Title X administration should not obscure an important conclusion of our interviews, namely, that much more can be done under the status quo. The diversity of ways that regions and local grantees provided family planning services to men suggests that much more can be done by those willing to utilize the existing national priority designation and program flexibility. It seems plausible, for example, that regions may develop their own allocation and reporting approaches that include men, while local and state agencies may be more energetic in seeking alternative sources of funding to support male-aimed efforts. Finally, we urge that the female-centered tradition and character of many family planning agencies—if not of the entire system—should not be perceived as antagonistic to men's involvement. Female-centeredness is simply the historical outcome of efforts to serve women's health needs. Expansion of the Title X program to include efforts aimed at men should not result in arbitrary changes imposed on female-centered clinics. Moreover, while each local agency should be allowed to define an approach to male involvement that is consistent with its unique characteristics, the national and regional administrations should be instructed to develop a strategy for making Title X resources available for services for men. The argument for male involvement asks only for the recognition of men's role in family planning and a genuine openness within the structure of Title X to permit and promote services to men.

A great strength and contribution of the Title X program has been its support of diverse approaches to the provision of family planning services and education. Male involvement has received support at all levels of the Title X program. However, we believe it is time to overcome some of the problems that weaken this support and to seek a higher level of integration of men into the vision, policy and administration of Title X. Successful incorporation of male involvement will strengthen the entire family planning program.

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### Correction

In "The Delivery of Family Planning and Health Services in Great Britain," by Jane Silverman and Elise F. Jones [**20**:68, 1988], the second footnote on page 69 should read as follows: "A GP gives a patient a prescription for a method, but the woman must obtain her supplies at the pharmacy; a clinic generally provides supplies for a method on site."

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# DIGEST

## Worldwide NORPLANT Experience Indicates Low Pregnancy Rates, but Some Intercountry Variation

NORPLANT® hormonal contraceptive implants show not only high rates of effectiveness, but also high continuation rates: The pregnancy rate is 0.2 per 100 woman-years in the first and second years of use, and 70 percent of women continue using the implant for two years. Effectiveness rates differ by country, however, a phenomenon that is explainable by national variations in women's body weight; continuation rates and the reasons for removal of the implant also vary by country. In all countries, changes in menstruation are the predominant reason for discontinuation in the first two years, followed by other medical problems. The majority of medically indicated implant removals result from symptomatic complaints, such as headaches or changes in weight, rather than from diagnosed disease. This and other information is provided by a review of all the data that have accumulated on NORPLANT since studies began in the 1970s.[1]

The NORPLANT implants, which are inserted just beneath the skin in a woman's upper arm, work by gradually diffusing levonorgestrel, a synthetic progestogen, into the user's bloodstream. Two types of implants have been developed by The Population Council: a capsule system, which consists of six 3.4 cm capsules, and a rod system (NORPLANT-2), which consists of two 4.4 cm rods By late 1987, trials had been under way in more than 20 countries, 12 countries had approved the method for general use, and 200,000 women had received the implant, according to Irving Sivin, senior associate at The Population Council and author of the review.

### Pregnancy Rates

The first trials of the capsule form of NORPLANT, implemented before 1980 among almost 1,000 women in six countries (Brazil, Chile, Denmark, the Dominican Republic, Finland and Jamaica), showed annual Pearl pregnancy rates ranging from 0.3 per 100 woman-years in the first year of use to 1.5 in the fourth year; in years 6–8, however, the rates ranged from 3.0 to 4.4 per 100 woman-years. As a result, NORPLANT capsules are recommended for no more than five years of use.[2]

The second phase of the trials, begun after 1980, has included over 150,000 women in more than 20 countries.* The pregnancy rate was 0.2 per 100 woman-years in both the first year of use (based on 12,133 woman-years) and the second year (5,806 woman-years). In years three, four and five, rates were 0.9 (1,632 woman-years), 0.5 (1,163 woman-years) and 0.1 (835 woman-years), respectively. These rates varied according to country, however; for example, the second-year rate was 2.1 in the United States but was only 0.1 in China.

Data from seven countries (Chile, China, the Dominican Republic, Finland, India, Sweden and the United States) on NORPLANT-2 show that through two years of use the rods appear to be as fully effective as the capsules and may even be "marginally superior," according to the investigator. The average first-year pregnancy rate for the rod was 0.1 (3,826 woman-years), and the second-year rate was 0.2 (2,653 woman-years). Results from these studies suggest that the pregnancy rate in the third year is about the same as that for the capsules, but is considerably higher thereafter. In the fourth year of use of the rods, pregnancy rates rose sharply, averaging more than 2.5 per 100 women (a rate equivalent to the estimated use-effectiveness of combined oral contraceptives) and exceeding 3.5 per 100 in some of the studies.

Data on plasma levels of levonorgestrel in women using either form of NORPLANT were analyzed in an attempt to account for the marked increases in fourth-year pregnancy rates for NORPLANT-2 and for the intercountry variations in NORPLANT pregnancy rates. At six months of use (plus or minus three months), the mean plasma concentration for both NORPLANT systems was about 350 picograms per milliliter (pg/ml). From months 12 through 30, users of both systems had plasma concentrations that were not significantly different, with plasma levels decreasing to approximately 250 pg/ml at month 30. Plasma concentrations continued to fall in women who use NORPLANT-2, diminishing to approximately 200 pg/ml by month 48. In contrast, the women who were using capsules did not experience a decline in levels of plasma between the 30th month of use and months 48–54; the mean levels remained above 250 pg/ml. Thus, it is when mean plasma values decrease below 250 pg/ml that pregnancies are more likely to occur, Sivin concludes.

In women who used the capsules (and those who used the rods as well), plasma levels of levonorgestrel were affected by their body weight. At all durations of use, significant differences in plasma levels were evident between women who weighed more than 70 kg (154 lbs.) and those who weighed less than 50 kg (110 lbs.); between the end of the second year and the middle of the fifth, significant differences also appeared between those weighing 50–59 and 60–69 kg. Consequently, women at the extremes of the weight scale showed significantly different pregnancy rates: Those weighing 70 kg or more at the time the capsules were implanted had an estimated five-year cumulative pregnancy rate of 7.6 per 100 women, but the rate was only 0.2 among those weighing less than 50 kg. According to Sivin, differences between countries in NORPLANT pregnancy rates are due to differences in the weight distribution of the users in each country. Body weight, Sivin notes, does not appear to affect the rate at which levonorgestrel is released from the implants; instead, it seems to affect the dilution or metabolism of the hormone.

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*The countries in which trials have been conducted are Bangladesh, Brazil, Chile, China, Colombia, the Dominican Republic, Ecuador, Egypt, Finland, Ghana, Haiti, India, Indonesia, Kenya, Korea, Malaysia, Mexico, Nepal, Nigeria, the Philippines, Senegal, Singapore, Sri Lanka, Sweden, Taiwan, Thailand, Tunisia, the United States and Zambia.

### Discontinuation and Side Effects

One-year continuation rates for NORPLANT capsules ranged from a low of 76 per 100 women in the Scandinavian countries to 99 per 100 in Sri Lanka; three-year rates varied from 44 per 100 in the Dominican Republic to 88 per 100 in Indonesia; and five-year rates varied from 25 per 100 in the Dominican Republic to 78 per 100 in Indonesia. For NORPLANT-2, the one-year continuation rates ranged from 80 per 100 in the Scandinavian countries to 95 per 100 in Chile, and three-year rates ranged from 56 per 100 in the United States to 75 per 100 in Chile.

Data from randomized comparative trials of both forms of NORPLANT in five countries show 25-month continuation rates of 70 and 72 per 100 users for the rod and capsule systems, respectively. Menstrual problems were the leading cause of discontinuation at the end of two years (the rates were 14 per 100 users for both systems), followed by other medical problems (eight per 100). Only 0.4 per 100 users of the rods, and 0.7 per 100 users of the capsules, discontinued use because of a pregnancy.

The most frequent side effects of either form of implant were related to alteration of the menstrual cycle such as excessive, prolonged or acyclic bleeding. Although amenorrhea occurred among few women using either form of NORPLANT, long lapses in menstrual bleeding were not uncommon.

To study the extent to which the capsules alter menses, daily records were kept by 116 women, from the time they received the implant (before 1980) through their fifth year of use. (These women were distinct from other women with capsules in that the menstrual changes they experienced were probably less severe than those of other women, as indicated by their use of the method for five years.) The mean number of days per year that these women bled diminished steadily, from 54 days in the first year to 44 days in the fifth; the mean number of days of spotting likewise diminished, from 38 days in the first year to 26 days in the fifth. The combined average number of bleeding and spotting days in the second year was closer to the fifth-year average than to the first-year average, indicating that the major reduction in bleeding occurred between years one and two. Women who had fewer than the average number of bleeding days in the first year, as well as those who had many more than the average, drifted toward the mean in subsequent years, although they remained either below or above the average.

Women who had the capsules removed within a year because of bleeding problems did not, on average, have a decrease in hemoglobin levels; women who had the rods removed for the same reason had a slight, but insignificant, decrease in hemoglobin levels. In the first three years, mean hemoglobin levels among women with capsule implants were higher than their initial levels were.

Detailed information on discontinuation for medical reasons other than menstrual problems is available from Chile, China, the Dominican Republic, Finland and the United States. The rates of such discontinuations during the first year of use ranged from one per 100 to eight per 100 for both the capsules and the rods. Symptomatic complaints, rather than diagnosed diseases, were responsible for the majority of medically related discontinuations of the capsule implants (51–65 percent) and the rod implants (72 percent). The only exception to this pattern occurred in China, where just 33 percent (capsules) and 21 percent (rods) of such discontinuations involved symptomatic complaints. In all of these countries, headaches or weight changes were the most common symptoms.

Placement-related problems accounted for 5–16 percent of medical terminations of either NORPLANT system, and cardiovascular problems, for 2–29 percent of medical terminations. Only women in the United States and China experienced hematologic problems (such as anemia), which resulted in five percent and 18 percent of medical discontinuations in the two countries, respectively. Pelvic problems, such as ovarian cysts, uterine fibroids or lower abdominal pain, accounted for 3–12 percent of the medically indicated implant removals.

Women seeking pregnancy after having their implants removed experienced relatively high rates of conception: More than 20 per 100 had successfully conceived within one month, more than 50 per 100 by three months, 86 per 100 one year after and 93 per 100 two years after the removal of the implants. Sivin reports that women who became pregnant experienced no increased incidence of ectopic pregnancy, spontaneous abortion, stillbirth or congenital malformation, and the sex ratios of their children appeared unaffected by the implants. Nevertheless, he stresses that the data available for study on this issue are scarce.

The Population Council, the World Health Organization and Family Health International are collectively planning a controlled study of 15,000 women (to result in 50,000–75,000 woman-years of observation), in an effort to define more firmly the short-term and middle-term health risks attendant with this contraceptive method.

### The Future

According to Sivin, "Several recent events will have a strong effect on the ultimate extent of use of the implant systems." One of these events occurred in mid-1987, when the manufacturer of a polymer used to form the core of the rod implants ceased production, requiring the reformulation of NORPLANT-2. Depending on regulatory requirements in the countries where the implant has been approved, the reformulation may substantially delay distribution of NORPLANT-2. The expected price advantage of NORPLANT-2 over the capsule system (the result of the more automated manufacturing procedures used) will be offset by the need to replace the rods more frequently than the capsules. And the large-scale use of either NORPLANT system will require greater financial investment by family planning programs than is necessary for a similar number of acceptors of oral contraceptives or the IUD.

Nevertheless, according to Sivin, "NORPLANT contraceptives will be in strong demand wherever the current mixture of available contraceptives has not provided so effective, convenient, and satisfactory a mode of reversible contraception as do the implants."

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# NYC Teenagers Who Are Young, White or Unmarried Are the Most Likely to End Unwanted Pregnancies

Teenagers in New York City are generally far more likely than teenagers elsewhere in the United States to turn to abortion, although according to a recently published analysis, there are important differences among New York City teenagers in their recourse to abortion. Adolescents aged 15 or younger are much more likely than 18–19-year-olds to turn to abortion after experiencing an unintended pregnancy; likewise, unmarried teenagers are more likely to do so than married teenagers, parous adolescents more likely than nulliparous teenagers and those with prior experience with abortion more likely than teenagers who have never had an abortion. White teenagers are far more likely to end a pregnancy by means of abortion than are young women of other races. Furthermore, New York City teenagers covered by Medicaid are less likely than those not covered by Medicaid to terminate a pregnancy. The study also uncovered sometimes substantial ethnic differentials among subgroups of young Hispanic women.[1]

The study used vital statistics data on 13,175 live births and 17,210 induced abortions among New York City women aged 19 or younger in 1984. (Fetal deaths and stillbirths were excluded.) There is some evidence of underreporting of abortion, in that the vital statistics data showed 96,802 induced abortions to have been performed in New York City in 1984, compared with 124,570 estimated by The Alan Guttmacher Institute; the investigator notes that it is unclear whether any particular subgroup of adolescent abortion patients is more likely to have been systematically underreported.

Overall, New York teenagers more often resolve a pregnancy by abortion than do teenagers nationally: In 1984, their abortion ratios (the percentage of all pregnancies ending in abortion) ranged from 52 per 100 among 19-year-olds to 66 per 100 among those 15 or under; in comparison, the abortion ratio among all U.S. teenagers in that year was 42 per 100.[2]

New York teenagers who have abortions are more likely than those who carry a pregnancy to term to be unmarried, to have had a previous abortion or to have already had a child. For example, among whites, 95 percent of abortion patients were unmarried, compared with 44 percent of those who had a live birth. The comparable proportions for women of other ethnic groups were 92 percent and 76 percent among Puerto Ricans and 89 percent and 59 percent among non–Puerto Rican Hispanics; only among blacks was the difference between these groups relatively small (97 percent and 92 percent, respectively). As for abortion history, 28 percent of white abortion patients had had at least one previous abortion, compared with seven percent of those who gave birth. Comparable proportions were 35 and 12 percent among blacks, 34 and eight percent among Puerto Ricans and 31 and seven percent among non–Puerto Rican Hispanics. Likewise, 29 percent of black teenagers who had abortions and 16 percent of those who gave birth had had a previous birth, compared with 31 and 18 percent among non–Puerto Rican Hispanics and 39 and 22 percent among Puerto Ricans; only among whites was there no difference (10 and 13 percent). According to an editorial accompanying the study, this finding may indicate that "having a baby brings home to young people and their families the full implications of assuming responsibility for a child."[3]

Abortion ratios calculated for each racial and ethnic subgroup showed that at all ages, white adolescents are substantially more likely to terminate a pregnancy than are other teenagers: For example, the ratio among white 16-year-olds was 78 abortions per 100 pregnancies, compared with 62 abortions per 100 among blacks, 48 abortions per 100 among Puerto Ricans and 36 abortions per 100 among non–Puerto Rican Hispanics.

To further examine the role that demographic, social and economic characteristics may play in teenagers' pregnancy-resolution decisions, the investigator conducted a multiple regression analysis that controlled for differences in the young women's marital status, education and method of payment for the abortion and for neighborhood poverty rates. The analysis indicated that the youngest adolescents are far more likely to end their pregnancy by abortion than are the oldest. This is especially true among minority adolescents: For example, Puerto Rican, black and non–Puerto Rican Hispanic girls who were 15 or younger were more than twice as likely as 19-year-olds to have terminated their pregnancy (adjusted odds ratios were 2.19, 2.10 and 2.09, respectively), while the youngest whites were somewhat less likely to have done so (1.88).

In addition, the adjusted odds ratios by age among Hispanics and blacks were substantially higher than the crude odds ratios (those with no multivariate controls), whereas there was little difference among whites. This differential was especially great among those 15 and younger. The finding indicates that when the data are adjusted to take the effects of social and economic characteristics into account, young teenagers are more likely to turn to abortion than are older teenagers, presumably because their pregnancies are more likely to be unwanted. There also were some important ethnic differentials observed among non–Puerto Rican Hispanics: Cuban teenagers were far more likely to have turned to abortion (adjusted odds ratio of 3.9) than were young women of Central or South American background (1.0), Mexicans (0.91) or other Hispanic adolescents (1.8).

Previous experience with abortion also has an important impact on the pregnancy-resolution decisions of New York teenagers: White teenagers who had had one previous abortion were 7.0 times more likely than those with no abortion experience to terminate their pregnancy; comparable non–Puerto Rican Hispanics were 5.6 times more likely, Puerto Ricans were 4.6 times more likely and blacks were 3.8 times more likely to have done so than their counterparts with no abortion experience. Puerto Rican teenagers whose medical care was covered by Medicaid were half as likely (0.53) to turn to abortion as were those not covered, while in the other groups, women covered by Medicaid were even less likely to have abortions (0.35 among blacks, 0.33 among non–Puerto Rican Hispanics and 0.17 among whites). The availability of family planning clinics or abortion facilities had little impact on the teenagers' decision to have an induced abortion.

The author concludes that since teenagers who had their medical care paid for through Medicaid (which is used as a proxy for eligibility for public assistance) were less likely than other women to have turned to abortion, the data are consistent with the view that welfare encourages out-of-wedlock childbearing. However, he also points out that some of the childless women who paid for their abortions themselves might have been eligible for Medicaid if they had had children, and that Medicaid status may be a better indicator of poverty status than of welfare eligibility; thus, he notes, his data are "far from conclusive." The investigator also observes that "regardless of how accessible abortion services are, teenagers in poverty will be less likely to seek abortion than their more educated, and financially better off, counterparts. This . . . is especially troubling."

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## New Treatment to End Early Pregnancy Found To Be Safe and Effective

Oral administration of epostane, a compound that inhibits the synthesis of progesterone, appears to be an effective and safe method for terminating unwanted pregnancy in the first eight weeks, according to researchers in the Netherlands who recently conducted a clinical trial of the compound.[1] Eighty-four percent of the women enrolled in the trial had their pregnancies terminated within 14 days of the beginning of treatment. The only reported side effects were moderate nausea and abdominal cramps.

The sample consisted of 50 pregnant women who had decided to terminate their pregnancies and who voluntarily agreed to participate in the study. Before entering the trial, the women underwent general physical and gynecologic examinations. The duration of pregnancy was determined by ultrasound measurements. All participants met the following criteria: They were at least 18 years old; had been amenorrheic for fewer than 56 days; weighed between 40 and 80 kg (88–176 lbs); had no history of hypertension or of liver, kidney, endocrinologic or metabolic disorder; had no known allergy to medications; and had received no steroid therapy during the previous three months. Breastfeeding women and women with a history of repeated spontaneous abortions, pregnancy complications or complications of induced abortions were not included in the trial.

Participants were instructed to take one 200 mg epostane tablet every six hours for seven days and to keep a record of the time they took the pills, any discomfort they experienced and the onset and severity of vaginal blood loss. To determine the status of their pregnancies, the women underwent general physical and gynecologic examinations on the seventh and 14th day after the beginning of treatment; an ultrasound examination was also performed on day 14. In addition, blood hormone levels and a number of other biochemical parameters were measured. Women whose pregnancies were terminated by the 14th day were classified as "responders" to epostane, and those whose pregnancies continued after that day were classified as "nonresponders."

The study revealed that 42 of the 50 women, or 84 percent of all participants, had their pregnancies terminated within two weeks of the beginning of epostane treatment. On average, responders experienced vaginal blood loss three days after the beginning of treatment, and expelled the products of conception on the fifth day. Two responders experienced complications; one required a blood transfusion, and the other, dilation and curettage on day 20. Eight women (16 percent) did not respond to treatment and subsequently underwent dilation and curettage without complications.

Differences between responders and nonresponders according to age, duration of pregnancy and number of prior pregnancies were not statistically significant, however, primigravidas were somewhat more likely than multigravidas to have their pregnancies terminated (90 percent vs. 76 percent).

Prior to treatment, the serum progesterone levels of responders and nonresponders were similar. However, by the seventh day, progesterone levels had decreased significantly among responders, and slightly, but not significantly, among nonresponders; the difference in levels between the two groups was statistically significant ($p<0.0002$). By the 14th day, progesterone levels had decreased further among the responders, but had returned to near pretreatment levels among nonresponders; the difference in progesterone levels between the two groups was highly significant ($p<0.00005$).

Mean levels of human chorionic gonadotropin (hCG)—a hormone that stimulates the ovaries to produce sufficient progesterone and estrogen to maintain pregnancy in the first trimester—were compared among a subsample of responders and nonresponders matched for duration of amenorrhea, gravidity and age. By the 14th day, hCG levels had decreased significantly among women whose pregnancies were terminated, but they continued to increase among those whose pregnancies were not terminated.

Eighty-six percent of all participants experienced nausea during treatment; however, a majority (64 percent) of these women said that it was no more severe than pretreatment nausea. Whereas nonresponders reported no increase in abdominal cramps during treatment, 88 percent of responders said their cramps were more severe than what they experienced during a normal menstrual cycle. Nevertheless, none of the responders found the cramps intolerable. Seventy-six percent of all participants reported that taking epostane was preferable to undergoing dilation and curettage.

The majority of women had resumed menstruation by 42 days after the beginning of treatment. This prompt restoration of the menstrual cycle reflects the short half-life of epostane.

According to the researchers, epostane inhibits the synthesis of progesterone, which is necessary to maintain pregnancy in the first eight weeks. However, the exact level of progesterone insufficiency required to terminate pregnancy appears to vary from woman to woman. One possible explanation for epostane's failure among nonresponders, they contend, is that the levels and sensitivity of the enzyme necessary for progesterone synthesis may vary among responders and nonresponders, and may have contributed to the continued increase in hCG levels among nonresponders.

The investigators point out that termination of pregnancy can also be achieved by administering the progesterone antagonist RU 486.[2] They suggest that the use of epostane to lower the level of progesterone, followed by the administration of a progesterone antagonist to counteract progesterone, "may have a synergistic action and could be the most effective noninvasive method of terminating early pregnancy."

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# DIGEST

## Letting Others Make Sterilization Decision Raises Risk of Regret

One-fifth of Puerto Rican women who undergo tubal sterilization subsequently feel some regret over their decision. The factors most closely associated with poststerilization regret are young age at the time of the procedure, someone other than the woman making the sterilization decision, the absence of a daughter, sterilization failure and marital dissolution followed by remarriage. Education, parity and years since sterilization do not appear to be significant risk factors for regret, according to a recent analysis of data from the 1982 Puerto Rico Fertility and Family Planning Assessment.[1]

The study sample consisted of 846 women aged 15–49 who had had a contraceptive tubal sterilization between 1954 and 1982. (Women who had undergone sterilization for medical reasons only were excluded from the analysis.) Information was obtained about respondents' ages at first birth, at tubal sterilization and at interview; the year they had the procedure; their marital status at sterilization and at interview; their educational level; the number and gender of their children; who made the sterilization decision; whether they underwent sterilization for medical as well as contraceptive reasons; and whether they experienced sterilization failure or the death of a child subsequent to the procedure.

To determine the extent of their satisfaction or regret, respondents were asked, "As things look to you just now, are you pleased with your decision to have had an operation that would keep you from having any (more) children?" Women who answered "definitely no" or "maybe no" were asked the reason for their regret.

The researchers performed a logistic regression analysis to identify characteristics that contribute to or protect from sterilization regret. All variables that were found to be statistically significant at $p<0.10$ in the univariate analysis were then included in a final regression model to determine their importance after adjusting for other variables.

Overall, 21 percent of respondents reported some regret concerning their decision to undergo sterilization—half of them said they were definitely dissatisfied, and half said they were somewhat dissatisfied. Seventy-five percent of those who regretted their decision to any degree said they were dissatisfied because they wanted more children.

Age at sterilization was found to be significantly associated with regret, both in the univariate analysis and in the final regression analysis. In the final regression model, the odds ratio (OR) associated with a one-year age difference was 1.10, meaning, for example, that women aged 24 at tubal sterilization ran a risk of regret that was 1.10 greater than that of women aged 25 at sterilization. The risks of regret for five- and 10-year differences in age at sterilization were 1.63 and 2.64, respectively.

Twenty percent of respondents said that their husband, other relatives or their doctor had made the sterilization decision for them. These women were significantly more likely to experience regret than were those who had made the decision themselves or those who had done so in conjunction with their partners (ORs=3.12, 3.40 and 2.03, respectively vs. 1.0 and 1.13, respectively).

Other factors present at the time of sterilization that contributed to subsequent regret included having had a tubal sterilization for medical as well as contraceptive reasons (OR=1.52), and not having any daughters (OR=1.98). The increased likelihood of regret among women without daughters persisted at each level of parity, although parity alone was not associated with regret after adjustment for other variables.

Several events that occurred after sterilization were also found to be significantly associated with regret. Women whose sterilization had failed were almost three times more likely to experience regret than were those whose sterilization had succeeded (OR=2.86); and women whose union had broken up were four times more likely to express regret than were those whose union had remained intact (OR=4.20). Among women whose union had ended after sterilization, those who subsequently remarried were significantly more likely than those who remained separated or divorced to regret their decision. In fact, women who were separated or divorced at interview had a reduced risk of regret compared with all currently married women (OR=0.27). Although the death of a child was significantly associated with regret in the univariate analysis, there was no significant association between the two in the final regression model, possibly because of the small number of women (N=23) who reported the death of a child after tubal sterilization.

In the final regression model, neither educational level nor parity was associated with regret. Further, although time since sterilization was found to be an important predictor of regret in the univariate analysis, this effect disappeared in the final regression model when age at sterilization and marital dissolution following sterilization were controlled for.

According to the researchers, their analysis points out an important policy issue for facilities that perform "voluntary" sterilizations; namely, that women who believe that others have made the sterilization decision for them are much more likely to experience regret than are those who feel they have made the decision themselves. In addition, the investigators note, regret associated with young age at sterilization and with a change in marital status has been observed repeatedly in studies of women who request sterilization reversal.

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## Children of Older Women At Highest Risk of Low Birth Weight, Infant Death

Children born to women in their 40s appear to be at increased risk of low birth weight and of death within a year of birth, according to two recent studies, one statewide[1] and one national.[2] The state study showed that when controls for a variety of social and demographic characteristics are introduced, infants born to women 35 and over are those most likely to be underweight. The national research demonstrated that once the effects of birth weight are controlled for, babies born to white women 40 and older are shown to be 45 percent more likely to die than are the children of white women 25–29-year-old; this is true for both the 28 days after birth (the neonatal period) and the remainder of the child's first year of life (the postneonatal period). Differences among black women are not nearly as great, however, and follow no clear pattern.

The first study consisted of an analysis of birth certificate data from Illinois for 1980–1984 encompassing 184,567 births.[3] Data were limited to single live births to white or black women that were at gestations of at least 40 weeks and for which complete data were available on birth weight, maternal age and education, marital status, date prenatal care began and number of prenatal visits.

Overall, 1.7 percent of the infants were underweight. The proportion of low-birth-weight babies was highest among women 17 or younger (3.2 percent), fell steadily with increasing maternal age (to 1.3 percent among 30–34-year-olds) and then rose slightly (to 1.7 percent among women 35 and older). As might be expected, black women were more likely than white women to have a low-birth-weight baby (4.3 percent compared with 1.2 percent), unmarried women were more likely than married women (4.0 percent compared with 1.2 percent) and those who received inadequate prenatal care were more likely than those who got adequate care (3.7 percent compared with 1.3 percent).

However, a multiple regression analysis that controlled for the effects of race, marital status, education, parity and prenatal care reversed the effects of maternal age: Compared with the risk among infants of women 15 or younger, the risk of low birth weight among children of women 35 and older more than doubled (2.59). Further analyses using different subgroups or controlling for various factors confirmed that the oldest women were at highest risk. The results led the investigators to observe that "the high incidence of term low birth weight in young mothers reflects their poor sociodemographic and sociomedical status. Throughout the reproductive period, the independent effect of advancing maternal age is to reduce the potential for fetal growth."

Data from the National Infant Mortality Surveillance project were used in the second study to examine the association between maternal age and infant mortality in 1980.[4] Using vital statistics data from 48 states and the District of Columbia, the researchers linked the birth certificates of all 1,579,854 infants born in 1980 with the death certificates of 14,591 babies who died before their first birthday. The analysis was restricted to single infants (black or white only) who had been born to 25–49-year-old women and for whom data on birth weight, race, maternal age and time of death (either neonatal or postneonatal) were known.

The investigators found that babies born to mothers 25–29 and 30–34 years of age were equally likely to weigh less than 2,500 g at birth (4.2 percent of infants born to each group of whites and 9.8 percent of those born to each group of blacks). However, as with the study described above, they observed that the proportion of underweight newborns rose steadily among older women, to 5.2 percent and 6.2 percent among 35–39-year-old and 40–49-year-old white women, and to 10.2 and 11.2 percent among comparable black women.

In calculating the risks of infant, neonatal and postneonatal mortality, the researchers adjusted the data to account for the effects of differing birth weights. The resulting infant mortality risk was similar for babies born to 25–29-year olds and those born to 30–34-year-olds; however, compared with the babies born to 25–29-year-olds, the risk was 16 percent higher among white babies born to 35–39-year-olds and 14 percent higher among comparable black babies. Furthermore, among whites, the risk of infant mortality was 45 percent higher among babies born to 40–49-year-olds than among those born to 25–29-year-olds. At all ages, the risk of infant mortality was greater among blacks than among whites, although the difference narrowed with advancing maternal age.

The investigators found a similar pattern when they examined the risk of death within 28 days of birth (neonatal mortality). Among whites, there was little difference between age-groups under 40 in the risk of neonatal mortality; the babies of 40–49-year-olds, however, were about 35 percent more likely to die during the neonatal period than were the babies of 25–29-year-olds. Among blacks, the risk of neonatal death was highest among the children of 35–39-year-olds, who were 22 percent more likely than the babies of 25–29-year-olds to die in the first month of life. The researchers also observed that except at the lowest birth weights, the risk of neonatal mortality in specific birth-weight categories tended to rise with increasing age, among both blacks and whites.

The risk of postneonatal mortality was similarly linked to maternal age: Among whites, the babies of 30–34-year-olds and 35–39-year-olds were no more likely to die than were the babies of 25–29-year-olds, but children of 40–49-year-olds were 71 percent more likely to die in the postneonatal period. There were no significant differences among blacks.

The investigators conclude that the children of women 40–49 years of age are at heightened risk of dying in their first year of life. They warn, though, that they were not able to examine either the risk of fetal death or the cause of death by maternal age; because older women are more likely to have a baby with some chromosomal abnormality, this tendency may be related, at least in part, to the higher mortality risks observed among the babies of women 40 and older. Nonetheless, the researchers conclude that because of the success of current approaches for dealing with low birth weight, it appears relatively safe for women to postpone childbearing into their middle or even late 30s; it is only when they reach their 40s that the risk to their newborns rises significantly.

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## U.S. Maternal Mortality Greatly Underreported, Collaborative Study Finds

Maternal mortality remains underreported in the United States: A recent collaborative effort uncovered 37 percent more maternal deaths in certain sections of the country between 1980 and 1985 than had been reported to the National Center for Health Statistics (NCHS), the official monitor of maternal mortality.[1] Pregnant women whose deaths were pregnancy-related were more likely to be older, to be married and to be nonwhite than were those whose deaths were not pregnancy-related. The leading causes of maternal death over the six-year period were embolism, hypertension, ectopic pregnancy, obstetric hemorrhage and cerebrovascular accident. The investigators conclude that for a true picture of maternal mortality in the United States, a new system of reporting such deaths is needed.

In 1983, the U.S. Centers for Disease Control (CDC) helped organize the Maternal Mortality Collaborative, a group consisting of representatives from state maternal mortality committees and health departments in 19 states or localities around the country.* Between April 1983 and May 1987, members of the Collaborative submitted data to the CDC on the deaths of pregnant women in selected areas between 1980 and 1985; the study investigators reviewed these data and classified the deaths as maternal or nonmaternal, based on the International Classification of Diseases, Clinical Modification, Ninth Revision (ICD).

# DIGEST

Maternal deaths were defined as those related to pregnancy that occurred either during or within one year of pregnancy. A maternal death could be direct (where it was caused by complications of pregnancy, labor or delivery) or indirect (where pregnancy exacerbated a preexisting condition). In addition, a number of deaths occurred during pregnancy or within a year of pregnancy that were deemed accidental or incidental (for example, as a result of an automobile accident or cancer); these were classified as nonmaternal.

Members of the Collaborative identified 714 deaths as possibly maternal; of the 712 for which there was enough information, 601 were eventually classified by the researchers as actually pregnancy-related. Eighty-four percent of them were direct maternal deaths. The investigators found that the Collaborative had reported 37 percent more maternal deaths (direct and indirect) than had the NCHS for the same states or areas over the same period of time. (One reason for the difference, the investigators suggest, may be that the NCHS defines only deaths occurring within 42 days of delivery as maternal, rather than those occurring within a year.)

The investigators used the data they collected to calculate a maternal mortality ratio (the number of maternal deaths divided by the number of live births). Over the six-year period examined, the mortality ratio was 14.1 deaths per 100,000 live births. Ratios rose steadily with age; among women 30 and older, the risk of maternal mortality was 2.5 times greater than that for women younger than 30 (31.3 vs. 12.3 deaths per 100,000 live births). In addition, the mortality ratio among nonwhite women (26.7 per 100,000) was 2.7 times greater than that among white women (10.0 per 100,000). Age was related to maternal mortality among both whites and nonwhites; however, the ratios climbed more rapidly with increasing age among nonwhites than among whites, so that by age 40 or older, nonwhite mortality was about four times that of whites. Although separate ratios for the married and unmarried were not calculated, the researchers note that 64 percent of women who died as a result of pregnancy-related complications were married, compared with 54 percent of those who died as a result of problems not associated with pregnancy.

Twenty percent of the 507 direct maternal deaths studied by the Collaborative were caused by embolism, 15 percent by hypertensive disease, 12 percent by ectopic pregnancy, 11 percent by obstetric hemorrhage, 10 percent by cerebrovascular accident and eight percent by anesthesia. Six percent were related to abortion (induced or spontaneous). Thirty-six percent of the 94 indirect maternal deaths were associated with infection (two of them were AIDS-related), 33 percent with cardiovascular problems and 31 percent with other causes.

Of the 111 nonmaternal deaths occurring among pregnant women, 81 percent were injury-related, and of these, 34 percent were the result of traffic accidents, 33 percent were homicide-related, 14 percent were suicides and 18 percent were the result of falls, fires or other accidents.

Mortality ratios were higher among older women for each pregnancy-related cause of death except infection. In every case, ratios among nonwhites were higher than those among whites. The differentials in ratios suggest that nonwhites are 5.3 times as likely as whites to die of ectopic pregnancy, 4.2 times as likely to die of anesthesia-related complications and 4.1 times as likely to die as a result of abortion. In comparison with the ratios calculated from cause-specific data from 1974 to 1978, those based on the more recent data were lower except for anesthesia-related deaths, cerebrovascular accidents and indirect causes. (According to the investigators, one reason for the apparent increase in mortality ratios related to indirect causes may have been a change in the ICD maternal death codes in 1979.)

These data cannot be generalized to the United States as a whole, the investigators caution. Nonetheless, the results of their study clearly indicate the need for more complete reporting of maternal mortality than has been possible with the national vital statistics system. The researchers suggest that the current approach be supplemented by an active system in which health care providers report pregnancy-related deaths to the CDC and provide detailed information about these deaths.

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*The states of Georgia, Indiana, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Mississippi, Montana, Nebraska, New Jersey, North Carolina, Oklahoma, Rhode Island, Virginia and Washington, as well as San Jose, California, New York City and Puerto Rico.

# Books in Review

## Low Fertility in Perspective

**Below-Replacement Fertility In Industrial Societies**
*ed. by Kingsley Davis, Mikhail S. Bernstam and Rita Ricardo-Campbell, Cambridge University Press, New York, 1987, $44.50, 360 pp.*

**The Birth Dearth**
*by Ben J. Wattenberg, Pharos, New York, 1987, $16.95, 192 pp.*

*Reviewed by John Ermisch*

Period fertility rates below the replacement level are now common throughout the industrialized world. Only Ireland and some countries of Eastern Europe are exceptions. Indeed, four countries of Western Europe (the Federal Republic of Germany, Luxembourg, the Netherlands and Switzerland) have had total fertility rates below 1.6 for 10 years or more, and another four (Austria, Belgium, Denmark and Italy) have been below 1.6 since the early 1980s. A review of the causes and consequences of below-replacement fertility, a topic these two books address, must take into account its widespread nature as well as recognize that some countries have much lower rates than others.

The collection of papers edited by Kingsley Davis and colleagues emerged from a 1985 seminar held at Stanford University's Hoover Institution. Originally published as a supplement to *Population and Development Review*, it includes commentary by the cream of American demographers. As may be expected from such a distinguished group, the quality (of both the papers and the comments that follow them) is outstanding; all provide new insights and understanding in lucid prose.

More than half of the volume explores the causes of below-replacement fertility, either through economic modeling or less formal reasoning. Interpretative papers by Kingsley Davis, Charles F. Westoff and Samuel H. Preston strongly suggest that later marriage and childbearing, increasing nonmarital cohabitation, more divorce and greater labor-force participation by women are all associated with low fertility. The underlying causes of low fertility are also likely to produce these other changes in family and society, all common to most industrialized countries (with Japan providing some exceptions).

A major difficulty in identifying the underlying causes of these interdependent developments is finding factors that are exogenous—those that, in T. Paul Schultz's terminology, are the "forcing developmental variables" that set these changes in motion. One truly exogenous factor is the contraceptive pill, introduced during the early 1960s in most of the countries (again, Japan is a notable exception) now experiencing below-replacement fertility. The diffusion of this new technology undoubtedly took time and varied across countries, but the pill was most likely the key to all of these changes in family and society.

Preston's paper suggests the following scenario (although he should not be held responsible for my interpretation): In the past, an important function of marriage was to assign responsibility for the consequences of sexual activity; sex outside of marriage was risky, particularly when a birth control method required the cooperation of both partners. With the introduction of the pill, low-risk sexual activity became possible without the insurance of marriage; many young people cohabited first and married later as a result. Later marriage meant that women accumulated more work experience and increased their earning potential, and they began childbearing later. Their higher earning potential increased the cost of children (Harriet B. Presser elaborates on this), thereby lowering fertility, and gave women more economic independence, increasing the likelihood that they would divorce when marital strains arose. The higher risk of divorce both provided an extra incentive for women to maintain their labor-force attachment and invest in marketable skills and increased the risk of childbearing, lone motherhood often being a precarious economic existence. This higher risk, even within marriage, probably also led to later childbearing and smaller families. Thus, the pill most likely had effects on society well beyond simply reducing unwanted births.

I have focused on the pill because it is exogenous and because it probably played some role in all of the societal changes associated with low fertility. There is doubtless more to the story. Economic models are used in the book to explore some other causes of below-replacement fertility: T. Paul Schultz focuses on the effects of the value and allocation of time; Gary S. Becker and Robert J. Barro examine the implications of parental altruism toward children; and Mikhail S. Bernstam studies the role of interfamily transfers of income (such as social security and public education) in reducing fertility in highly competitive modern societies.

By increasing the value of time and providing new consumption opportunities, economic advance undoubtedly plays a role in the secular decline in fertility. In his comments on the paper by Becker and Barro, Paul A. David points to another important facet of economic development that is usually ignored. Development has generally made economic activities more predictable, insurable and controllable, in contrast to the uncertainties of child-related activities (What sort of child will we have? How will he or she fare in life? What did we do wrong?). Parental altruism makes having children a risky business and encourages people to seek satisfaction through activities with more certain outcomes. In addition to providing these useful insights, David's comments are among the most entertaining reading in the book.

Other parts of this volume, as well as Ben Wattenberg's book, focus on the consequences of low fertility and on policy responses to them. Although prospective changes in age distribution over the next 20 years have important implications (for instance, the relative scarcity of young workers that will emerge during the 1990s), dramatic changes generally occur only if one looks 50 or more years down the road. Even assuming that the projection of sustained low fertility is correct, the inferences that can be drawn from these long-term demographic changes are limited, because the economies and societies of that time are likely to be radically different from today's in ways independent of demographic changes. Could anyone in the 1930s have envisioned today's society?

Exercises that attempt to make forecasts while assuming that society will not change dramatically are not totally valueless, but they should be interpreted with caution, given the uncertainty about what lies ahead. For instance, Ansley Coale draws attention to how low fertility generates an inverted age pyramid, in which the number of persons increases with age. Such an age distribution would be incongruent with the present status and pay structures of most organizations. The implications of the inverted pyramid depend, however, on future technology's impact on the organization of work, the types of

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jobs it generates and the interaction of education and retraining with these factors.

In general, I can only agree with Geoffrey McNicoll, who observes in his paper that institutional adaptation to the age distribution changes produced by low fertility should not be beyond the wit of man and woman. This is particularly true for the next 20 years or so, when changes will not be dramatic in most countries. The parts of Europe that are experiencing the lowest fertility in the world could, however, face more difficult problems than will be seen in countries like the United States, where total fertility rates are in the region of 1.8. The older labor force that could result from severe scarcities of young workers, Ester Boserup explains, may exert political pressures that retard technological innovation, structural change and productivity increases. These, in turn, could erode the international competitiveness of the economies involved.

Although the degree of the problem is subject to considerable uncertainty, sustained low fertility threatens the future viability of pay-as-you-go pension systems. In the past, when the ratio of workers to pensioners was high, promises of greater benefits and wider coverage were cheap to make. Continued low fertility will make these promises expensive to keep 40–50 years from now, when the small post-1970 generations must pay the pensions of the baby-boom retirees. In her paper, Carolyn L. Weaver elucidates the pension issues well, illustrating them with data from many countries, and she argues convincingly that a future of periodic political strife over pensions is in store for most, if not all, low-fertility societies. Problems of pension finance have developed recently in a number of countries because of the maturing of benefit plans (what Weaver calls the "aging of social security"). But the biggest pressures on the finances of state pension plans arising from the aging of populations will not emerge until the early decades of the next century. Because people make important decisions during their working careers on the basis of what they can expect from state pensions, policy changes need to be made with considerable advance notice, despite the uncertainty about the future.

Ben Wattenberg is much more alarmed about below-replacement fertility (what he calls the "Birth Dearth") than are any of the contributors to the first volume. Wattenberg's book is written in popular style. Although he notes that his ideas are speculative, he nonetheless appears to draw some firm conclusions. I would feel better if he were popularizing sound analysis.

In addition to being concerned about pension finance, Wattenberg is worried that a declining population will cause shrinking domestic markets and thereby a deficiency in aggregate demand in the economy. What he seems to forget is that increases in per capita income have provided a far greater impetus to market growth for most products than has population increase. He does not refer in his discussion of economic effects to previous studies showing the small impact of demographic factors on consumer demand and investment. The roles played by changes in relative prices, foreign trade and capital flows in a society's adjustment to demographic shifts are virtually ignored also.

Another major concern of Wattenberg's is the geopolitical and cultural implications of a shrinking share of the world's population in the industrialized democracies. His analysis relies partly on the wonders of projecting the populations of all the countries of the world 100 or more years into the future. The dominant influence on the share projected for the developed world is fertility in the rest of the world. Wattenberg uses United Nations projections that assume the fertility of developing nations will reach replacement level in 60 years. However, would the projections differ substantially if fertility in industrial societies were to rise to replacement level? Even if it did rise, the share of world population in industrialized democracies could be as low as that shown by Wattenberg, if the fertility of developing nations were to fall less rapidly than assumed. In other words, within a plausible range, the fertility of the industrialized countries may not matter very much for their share of world population.

But, of greater importance, does the prospective decline in their share of population affect the political and cultural influence of the nations involved? As Geoffrey McNicoll's paper argues, the technological dominance of the industrialized countries, rather than demographic weight, has been the source of their influence, and it is very likely that this dominance will persist. It may not. But then again, the world may be very different 100 years from now in many ways. It appears foolish to try to increase fertility in the industrial societies to alter marginally the balance of population in a hardly imaginable world 100 years hence.

Differential fertility is already a source of strain in international relations, and low fertility in the industrialized countries reinforces it. As Ester Boserup reminds us in her comments, the world economy can adapt if the low-fertility countries import labor and labor-intensive products from high-fertility countries or if capital and labor-intensive industries move in the other direction. We are all aware of the growing resistance in developed countries to immigration and "cheap labor" imports. Thus, adjustment tends to take the form of outward movement of capital and labor-intensive activities, particularly through multinational corporations. As research and development is labor intensive, there is the interesting possibility, raised by Boserup, that technological development may also move to the developing countries, thereby reducing the technology gap.

Finallv, McNicoll and Wattenberg are both concerned with the difference in socioeconomic status between women who produce two or more children and those who do not. In Wattenberg's words, "the Birth Dearth is due to low fertility among the middle and upper classes" [p. 77]. While low fertility did not need to come about this way, McNicoll adds, "it matters greatly in judging the economic consequences of low fertility whose fertility (and whose migration) is left" [p. 229], because of differences in human capital accumulation between socioeconomic groups. Production of human capital in the population as a whole suffers as a consequence of these differences.

Wattenberg suggests a number of practical remedies for the Birth Dearth. In particular, he proposes an annual cash allowance for each child, suggesting that we should spend whatever is required to raise the birthrate: "Let's pay for it if we have to" [p. 154]. However, economic models suggest that the fertility response to such an allowance would be proportionately larger among families for whom the allowance represented a larger proportion of their income (i.e., poorer families). Thus, the baby bonus would tend to buy more babies from couples in the lower socioeconomic groups than from middle-class ones.

Wattenberg's book does not convince me that there is a reason to intervene to raise the birthrate in industrialized countries. The sounder analysis and better understanding of causes and consequences provided by the first book do not suggest a compelling reason either, and Paul Demeny's closing paper expresses a similar opinion. Furthermore, while a return to the high fertility of the baby-boom years is unlikely, a spontaneous rise to the replacement level should not be ruled out.

# Endemic, but Not Epidemic

### An "Epidemic" of Adolescent Pregnancy?

*by Maris Vinovskis, Oxford University Press, New York, 1988, $24.95, 303 pp.*

*Reviewed by Sandra L. Hofferth*

*An "Epidemic" of Adolescent Pregnancy?* by Maris Vinovskis consists of eight loosely related essays that provide a history both of adolescent sex, pregnancy and childbearing in the United States and of the federal Office of Adolescent Pregnancy Programs (OAPP). Vinovskis also presents a case study of the attempt made by the Reagan administration to mandate parental notification by federally funded family planning clinics for delivery of contraceptive services to adolescents.

The book does a valuable service by placing concern for adolescent pregnancy into perspective, although its title, with quotes around epidemic and a final question mark, does a disservice by implying a questioning of the issue's importance. In fact, the author does believe that adolescent pregnancy is an important problem and argues for programs to address it. Apparently he disagrees only with the use of the term *epidemic* by The Alan Guttmacher Institute in *11 Million Teenagers—What Can Be Done About the Epidemic of Adolescent Pregnancies in the United States.*

Vinovskis is the person best suited to provide such a historical perspective, both as a demographic historian and as a member of the National Academy of Sciences Panel on Adolescent Pregnancy and Childbearing. But in his effort to disprove the epidemic, Vinovskis fails to identify the real issue, which is its endemic nature in the United States. It is particularly unfortunate that he focuses exclusively on research on U.S. adolescents; international comparisons show that rates of teenage pregnancy, abortion and childbearing in the United States are among the highest in the developed world.[1]

Most of the book is a political history of the OAPP, from the perspective of an "influential staff member rather than the one who made the decisions" [p. xvi]. As a member of the OAPP staff from 1981 to 1985, Vinovskis had a unique opportunity to provide a glimpse into the politics of teenage pregnancy. Even though his narrative of the OAPP's history is generally interesting and occasionally fascinating, there are few revelations, and the extreme selectivity of his coverage is disappointing. For example, the American Civil Liberties Union initiated a suit in 1983 contesting the Adolescent Family Life Act (AFLA) on the ground that it promoted "excessive entanglement" between government and religion. (The statute, enacted in 1981, provided for funding of demonstration projects through the OAPP to prevent premarital pregnancy—specifically by advocating chastity—and to promote adoption; many of the agencies that received money for the demonstration projects were religiously affiliated.) The suit may, in the long term, have had more of an impact on the types of programs funded than did the attempt to mandate parental notification, despite the greater publicity and public outcry aroused by the latter. Yet Vinovskis never mentions the issue raised by the suit—separation of church and state—which was an important constitutional issue that has arisen in several other positions taken by the Reagan administration, including its abortion policies. In fact, he does not mention the suit, perhaps because it was still being litigated, although Vinovskis was no longer employed by the OAPP and could have discussed it.

Even more puzzling is his omission of any reference to abortion. Yet the issue of abortion is a critical aspect of the current administration's policy on family planning—its reduction or elimination has been a major objective of the OAPP during this same period. Because of Vinovskis's selectivity in reconstructing events, examination of the importance of the OAPP years should perhaps be left to later analysts. Can someone as closely involved in the events of those years as Vinovskis was have an objective view?

## A Problem, but Not an Epidemic

In Chapters 1 and 2, Vinovskis asks an important question—why did adolescent pregnancy and childbearing become such an important social issue in the late 1970s and early 1980s rather than in the 1950s, when adolescent birthrates were in fact higher? He concludes that teenage pregnancy gained attention because of increased *premarital* sexual activity and an increased proportion of *out-of-wedlock* teenage births, rather than because of a larger number of births or higher birthrates. Concern over out-of-wedlock births increased in great part because of the perceived link between teenage births and welfare dependency and because of the whole controversy on spending for the Great Society programs.

Vinovskis argues that from a historical perspective, levels of premarital sexual activity and pregnancy rates have always fluctuated, and that there is no reason to think that a reversal in the current trend can not or will not happen. However, assuming that he is right, we still do not know what has caused these fluctuations and whether there is anything that can be done to bring about a reversal in the current trend. In addition, levels of adolescent premarital sexual activity are so much higher than in the past that there appears to be a sustained trend toward increased sexual activity at young ages.[2] It is worth developing demonstration projects with good evaluations to see whether postponement of intercourse can be achieved.

After the book's initial essays it is not clear to what extent history informs Vinovskis's subsequent analyses. He does provide a historical overview of the role played by fathers in childrearing. Certainly, comparison of the role of the adolescent father today with his counterpart a century ago is useful, particularly with the increased concern over the high proportion of families that are started out of wedlock or are disrupted by divorce and the distressingly low level of child support payments. Vinovskis's essay on this interesting issue, however, remains underdeveloped. Although he affirms the importance of the father's role, he does not specify what that role is or should be, nor does he present any research on the issue. Even though the role of adolescent fathers has been receiving greater attention, it is an important area for further study.[3]

Vinovskis, on the question of whether pregnant teenagers should be encouraged to marry, contends that researchers have not adequately discussed this issue and that they are in fact biased against teenage marriage. Actually, the matter has received substantial attention from researchers, but the consensus of the experts, including members of the recent National Academy of Sciences Panel on Adolescent Pregnancy and Childbearing (1985–1987), is that most school-age mothers are better off with their own parents.[4] Although the research study Vinovskis cites shows that pregnant teenagers who marry are somewhat better off than those who do not, the study findings do not imply that encouraging couples to marry would produce the same results.[5] To accurately interpret this research, one must recognize the self-selectivity of teenagers who marry. It is likely that only couples who are committed to each other

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and who get along well will marry. Encouraging couples to marry, regardless of their compatibility, would almost certainly not produce the same positive results.

### The OAPP

Vinovskis' history of the OAPP begins in the mid-1970s and ends with the departure of its director Marjory Mecklenburg in 1985. He focuses on the congressional hearings that led to its establishment in 1978, the passage of the Adolescent Family Life Act in 1981 and the effort to require parental notification by Title X–funded family planning clinics that provide contraceptive services to teenagers. The debates over the establishment of the OAPP programs and the passage of the AFLA are reviewed in great detail, apparently drawn from internal memos of the political actors and from the congressional hearing records. Brief mention is made of the part the Center for Population Research played; the National Institute of Child Health and Human Development (NICHD), of which the Center for Population Research is a part, funded most of the early research considered by Congress in its deliberations and used as justifications for both the OAPP and the AFLA.

According to Vinovskis, research played an important role in the debate over instituting the mandatory federal parental notification requirement, since it was used by both sides to bolster arguments and attack those of opponents; however, in launching this major policy initiative, the OAPP did not take seriously the importance of a solid knowledge base and drafted the regulation without reviewing existing scholarly studies. Once the decision to pursue the regulation was made, Vinovskis contends, the OAPP sought research to support its position. The academic and scholarly community usually opposed parental notification and in fact complained that their work was cited incorrectly and out of context. Under Mecklenburg, the office could not sufficiently support its case and consequently did not challenge a court ruling that permanently blocked the regulation in July 1983. Vinovskis maintains that the parental notification initiative occupied the office for a substantial amount of time, to the detriment of other activities: Besides consuming limited staff time, the parental notification fight succeeded in alienating the family planning community.

In an essay that critiques several evaluations of programs providing care to pregnant teenagers, Vinovskis devotes considerable attention to The Urban Institute's evaluation of the OAPP-funded projects. He considers the Institute to have done an excellent job in designing and providing standardized data collection forms. In the beginning of the evaluation, the Institute was under severe monetary and operational restrictions: The OAPP, out of fear of possible negative evaluations of care programs, failed to act expeditiously to provide the resources necessary for the evaluation and spent much less money than Congress had authorized. In addition, he contends that the office became unwilling to cooperate with the Institute because "conservative groups were attacking DHHS [the Department of Health and Human Services] for continuing to fund liberal organizations" [p. 193]. Vinovskis says that, as a result, we have very little idea which of the OAPP's demonstration projects worked, which did not, and what they cost the taxpayer after eight years of funding. To initiate and conduct effective program evaluation and disseminate the findings is not easy or cheap, but Vinovskis argues convincingly that it is the ultimate standard by which the agency should be judged. (It is ironic that even well-funded evaluations do not produce clear-cut results of a program's effectiveness: Vinovskis discusses the evaluation of Project Redirection, which showed both positive and negative program results.)

Vinovskis asserts that the Institute's evaluation of the OAPP projects is excellent under the circumstances. (The data collected by the Institute are available through the Data Archive on Adolescent Pregnancy and Childbearing and analyses could be conducted by other researchers.)

Vinovskis bases much of his analysis of the process of evaluation on two pregnant teenager care program evaluations—the study by Lorraine Klerman and James Jekel (both of whom were at Yale University) of the Young Mothers Program at the Yale–New Haven Hospital and the study by Frank Furstenberg (who was at Columbia University) of a comprehensive care project for pregnant teenagers in Baltimore. While both evaluations were excellent, the nature of each changed over time: The New Haven study followed teenage mothers beyond the end of the service-program funding and the Baltimore project evolved into a study of the long-term consequences of teenage childbearing.

Vinovskis strongly recommends using university faculty as program evaluators: "If the [Klerman/Jekel and Furstenberg] evaluations had been done by one of the many nonuniversity research groups specializing in such work in Washington, D.C., today, the long-term evaluations probably would have been dropped" [p. 183]. He must assume that university professors can conduct research without federal or foundation support; in fact, many more university-supported evaluations end at a project's completion than continue. (Furstenberg obtained substantial and well-deserved foundation support to continue to follow the Baltimore sample.) To conclude from these examples that university researchers conduct better evaluations than nonuniversity individuals seems an unwarranted generalization. Perhaps more to the point, the involvement of a university is no substitute for a dedicated scholar, regardless of the base of support.

In his concluding essay Vinovskis states that whereas adolescent childbearing is not an epidemic, it is still a problem that requires some effort at remedying. Research so far shows no lessening of the impact of early childbearing on a person's life; the effects may, in fact, even be stronger than in the past. I believe that the problematic nature of teenage pregnancy arises as much from changes in society as from changes in the behavior of youths. The very high rate of marital disruption means that a young woman cannot depend on marriage for economic security but must be economically secure on her own; to be self-sufficient, to be able to function in, let alone contribute to society, she must be well-trained. And, even though adolescent parents complete more schooling than they had in the past, so do their classmates. In fact, in order to just stay even in this highly technical society, everyone must complete more training—a difficult task for teenage parents. Teenage parents are not likely to ever catch up with their classmates.

Although teenage pregnancy is certainly not epidemic in the United States, given our high rates of teenage pregnancy and childbearing compared with those in other developed nations, and our inability to reduce these rates, the problem is clearly endemic to our country.

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## ORAL CONTRACEPTIVE (O.C.) AGENTS

**Indications** Prevention of pregnancy. *DOSE-RELATED RISK OF THROMBOEMBOLISM*: Because studies have shown a positive association between OC estrogen dose and risk of thromboembolism, it is prudent to minimize estrogen exposure. Prescribe an OC with the least amount of estrogen compatible with an acceptable pregnancy rate and patient acceptance. Start new users on OCs containing 0.05 mg or less of estrogen.

**Contraindications** 1. Known or suspected pregnancy (see Warning #5). 2. Thrombophlebitis or thromboembolic disorders. 3. Past history of deep vein thrombophlebitis or thromboembolic disorders. 4. Undiagnosed abnormal genital bleeding. 5. OCs should not be used by women who have or have had any of the following: a. cerebral vascular or coronary artery disease, including myocardial infarction. b. known or suspected carcinoma of the breast. c. known or suspected estrogen dependent neoplasia. d. benign or malignant liver tumor that developed during use of OCs or other estrogen containing products.

**WARNINGS: Cigarette smoking increases the risk of serious cardiovascular side effects from OC use. This risk increases with age and with heavy smoking (15 or more cigarettes per day) and is quite marked in women over 35 years of age. Women who use OCs should be strongly advised not to smoke.**

The use of OCs is associated with increased risk of several serious conditions including thromboembolism, stroke, myocardial infarction, liver tumor, gall bladder disease, visual disturbances, fetal abnormalities, and hypertension. Practitioners prescribing OCs should be familiar with the following information relating to these risks.

1. *Thromboembolic Disorders and Other Vascular Problems*: An increased risk of thromboembolic and thrombotic disease associated with OC use is established. One study demonstrated an increased relative risk for fatal venous thromboembolism and several studies demonstrated it for non-fatal venous thromboembolism. They estimate that OC users are 4-11 times more likely than nonusers to develop these diseases without evident cause. One British study reported an excess death rate of 40% in OC users, most of which resulted from cardiovascular disease. Another British study showed a lower death rate in OC users than controls; an increase in cardiovascular deaths was seen but was not statistically significant. A U.S. prospective study failed to disclose increased mortality rates from cardiovascular disorders, but a subset analyzed as a retrospective, case-control study showed significant increases in venous thromboembolism. CEREBROVASCULAR DISORDERS. Two American studies demonstrated an increased relative risk for stroke not shown in prior British studies. In an American study of cerebrovascular disorders in women with and without predisposing causes, relative risk of hemorrhagic stroke was estimated as 2.0 times greater and thrombotic stroke as 4-9.5 times greater in users than nonusers. A British long-term follow-up study reported in 1976 a highly significant association between OC use and stroke. Another study had suggested an association in 1974, but the number of cases was too small to estimate the risk. Subarachnoid hemorrhage has been shown to be increased by OC use in British and American studies. Smoking alone increases incidence of these accidents; smoking and pill use appear to increase risk more than either alone.

MYOCARDIAL INFARCTION (MI). Increased relative risk of MI associated with OC use has been reported. One British study found that the greater the number of underlying risk factors for coronary artery disease (cigarette smoking, hypertension, hypercholesterolemia, obesity, diabetes, history of preeclamptic toxemia) the higher the risk of developing MI, regardless of OC use. OCs were an additional risk factor. In terms of relative risk, it has been estimated that nonsmoking OC users (smoking is considered a major predisposing condition to MI) are twice as likely to have a fatal MI as nonsmoking nonusers. OC users who are smokers have a 5-fold increased risk of fatal infarction compared to nonsmoking users, and a 10-12-fold increased risk compared to nonsmoking nonusers. The number of cigarettes smoked is important. In determining the importance of these relative risks, baseline rates for various age groups must be considered. (Estimates are based on British vital statistics which show acute MI death rates 2-3 times less than in the U.S. so U.S. death rates could be higher.) Importance of other predisposing conditions in determining relative and absolute risks has not been quantified; other synergistic actions may exist. RISK OF DOSE. Using data from several national adverse reaction reporting systems, British investigators concluded that risk of thromboembolism, including coronary thrombosis, is directly related to estrogen dose in OCs. OCs with 0.1 mg or more of estrogen were associated with a higher risk of thromboembolism than those containing 0.05-0.08 mg but quantity of estrogen may not be the sole factor. This was supported by a U.S. study. A British study found a positive association between dose of progestogen or estrogen and certain thromboembolic conditions. Swedish authorities noted decreased reporting of thromboembolic episodes when higher estrogen preparations were no longer prescribed. Careful epidemiological studies to determine degree of thromboembolic disease risk associated with progestogen-only OCs have not been done. Thromboembolic disease has been reported in women using these products, and they should not be considered free of excess risk. PERSISTENCE OF RISK. Two studies have suggested an increased risk may persist for 6 years after discontinuation of OC use for cerebrovascular disease and 9 years for MI; another study suggested the persistence of risk for subarachnoid hemorrhage. ESTIMATE OF EXCESS MORTALITY FROM CIRCULATORY DISEASES. A large British prospective study estimated mortality rate per 100,000 women per year from circulatory system diseases for OC users and nonusers according to age, smoking habits, and duration of use. The overall annual excess death rate for OC users was estimated to be 20/100,000 (ages 15-34–5/100,000; ages 35-44–33/100,000; ages 45-49–140/100,000). Risk is concentrated in long-term users and in smokers, and may persist after OC discontinuation. Although the study showed a 10-fold increase in death due to circulatory diseases in users for 5 or more years, all occurred in women 35 or older. An update provided the following rates: ages 15-34–1/6700 for nonsmokers and 1/2000 for smokers; ages 45 and over–1/2500 for nonsmokers and 1/500 for smokers. Risk appeared to increase with parity, but not with duration of use. Until more women under 35 with continuous use for 5 or more years are available, it is not possible to assess relative risk for this age group. Data from a variety of sources have been analyzed to estimate the risk of death associated with various methods of contraception. Estimates include combined risk of the contraceptive method (e.g., thromboembolic and thrombotic disease for OCs) plus risk attributable to pregnancy or abortion if the method fails (which varies with the effectiveness of the contraceptive method). The study concluded that mortality associated with all contraceptive methods is below that of childbirth, except for OCs in women over 40 who smoke. (Rates given for pill only/smokers for each age are for smokers as a class. For "heavy" smokers (more than 15 cigarettes a day), the rates would be about double; for "light" smokers (less than 15), about half.) The lowest mortality is with the condom or diaphragm backed up by early abortion. The study also concluded that OC users who smoke, especially over 30, have greater mortality risk than OC users who do not smoke.

Risk of thromboembolic and thrombotic disease associated with OCs increases with age after 30 and for MI is further increased by hypertension, hyperlipidemias, obesity, diabetes, or history of preeclamptic toxemia, and especially by smoking. The following chart gives a gross estimate of risk of death from circulatory disorders associated with OC use.

SMOKING HABITS AND OTHER PREDISPOSING CONDITIONS–RISK ASSOCIATED WITH USE OF OCs

| Age | Below 30 | 30-39 | 40 + |
|---|---|---|---|
| Heavy smokers | C | B | A |
| Light smokers | D | C | B |
| Nonsmokers (no predisposing conditions) | D | C,D | C |
| Nonsmokers (other predisposing conditions) | C | C,B | B,A |

A–Use associated with very high risk.
B–Use associated with high risk.
C–Use associated with moderate risk.
D–Use associated with low risk.

Physician and patient should be alert to earliest manifestations of thromboembolic and thrombotic disorders (e.g., thrombophlebitis, pulmonary embolism, cerebrovascular insufficiency, coronary occlusion, retinal thrombosis, and mesenteric thrombosis). Should any of these occur or be suspected, discontinue OC immediately. A 4-6 fold increased risk of post-surgery thromboembolic complications has been reported in OC users. If feasible, discontinue OCs at least 4 weeks before surgery associated with increased risk of thromboembolism or prolonged immobilization. Before resuming OC after major surgery or bedrest, balance risks of post-surgery thromboembolic complications with contraceptive needs. Data suggest varicose veins substantially increase risk of superficial venous thrombosis of the leg, the risk depending on the severity of the varicosities. 2. *Ocular Lesions*: Neuro-ocular lesions such as optic neuritis or retinal thrombosis have been associated with OC use. Discontinue OC if there is unexplained, sudden, or gradual, partial or complete loss of vision; onset of proptosis or diplopia; papilledema; or retinal vascular lesions, and institute appropriate diagnostic and therapeutic measures. 3. *Carcinoma*: Long-term continuous administration of natural or synthetic estrogen in certain animals increases certain tumors, benign or malignant, such as breast, cervix, vagina, uterus, ovary, pituitary and liver. Certain synthetic progestogens, none currently in OCs, increase the incidence of mammary nodules, benign and malignant, in dogs. Several retrospective case-control studies reported an increased relative risk (3.1-13.9 times) associating endometrial carcinoma with the prolonged use of estrogens in postmenopausal women. One publication reported the first 30 cases submitted to the registry of cases of adenocarcinoma of the endometrium in women under 40 on OCs. Of the adenocarcinomas found in women without predisposing risk factors for adenocarcinoma of the endometrium (e.g., irregular bleeding when OCs were first given, polycystic ovaries), nearly all occurred in women who had used sequential OCs, which are no longer marketed. No statistical association has been reported suggesting an increased risk of endometrial cancer in users of conventional combination or progestogen-only OCs, although individual cases have been reported. Studies have shown no increased risk of breast cancer to OC or estrogen users. One study found no overall increased risk of breast cancer in OC users but a greater risk was suggested for OC users with documented benign breast disease and for long-term (2-4 years) users. Another study found a history of breast cancer among grandmothers or aunts was significantly more frequent among breast cancer patients who had used an OC continuously for one or more years than among nonusers with breast cancer. One other study indicated an increasing risk of breast cancer in women taking menopausal estrogens, which increased with duration of follow-up. One author suggests that extended (over 6 years) OC use prior to first full term pregnancy was associated with a significant relative risk of breast cancer. A reduced occurrence of benign breast tumors in OC users has been well documented. One study reported malignant melanoma more frequently in OC users than controls and suggests an increased incidence of urinary tract and thyroid cancers. A prospective study of women with cervical dysplasia found an increase in severity and conversion to cancer *in situ* in OC users compared to nonusers. This became statistically significant after 3-4 years of use. Nonreversal of dysplasia within the first 6 months of pill use was suggested to predict progression after prolonged exposure. One study disclosed an increased risk of cancer of the cervix (largely carcinoma *in situ*) in OC users under 40, particularly those who had used OCs over 4 years. There have been other reports of microglandular hyperplasia of the cervix in OC users. One study reported an association between OC use and endocervical adenocarcinoma. In summary, there is no confirmed evidence from human studies of increased risk of cancer associated with OCs. Close clinical surveillance of all OC users is, nevertheless, essential. In all cases of undiagnosed persistent or recurrent abnormal vaginal bleeding, take appropriate diagnostic measures to rule out malignancy. Monitor OC users with a strong family history of breast cancer or who have breast nodules, fibrocystic disease or abnormal mammograms with particular care. 4. *Liver Tumors*: Sudden severe abdominal pain or shock may be due to rupture and hemorrhage of a liver tumor. There have been reports associating benign or malignant liver tumors with short-term and long-term OC use. One study reported use of OCs with high hormonal potency and age over 30 may further increase risk of hepatocellular adenoma. Two studies relate risk with duration of use, risk being much greater after 4 or more years of use. Long-term OC users have an estimated annual incidence of hepatocellular adenoma of 3-4/100,000. Although an uncommon lesion, it should be considered in women presenting with an "acute abdomen". The tumor may cause serious or fatal hemorrhage. Patients with liver tumors have demonstrated variable clinical features which may make preoperative diagnosis difficult. Some cases presented because of right upper quadrant masses, while most had signs and symptoms of acute intraperitoneal hemorrhage. Routine radiological and laboratory studies may not be helpful. Liver scans may show a focal defect. Hepatic arteriography may be useful in diagnosing primary liver neoplasm. 5. *Use in or Immediately Preceding Pregnancy, Birth Defects in Offspring, and Malignancy in Female Offspring*: Use of female sex hormones–estrogenic and progestational agents–during early pregnancy may seriously damage the offspring. Females exposed *in utero* to diethylstilbestrol, a nonsteroidal estrogen, have an increased risk of developing in later life a form of vaginal or cervical cancer that is ordinarily extremely rare. This risk has been estimated to be of the order of 1/1000 exposures or less. Although there is no evidence that OCs further enhance the risk of developing this type of malignancy, such OC users should be monitored with particular care. A high percentage of women exposed to diethylstilbestrol (30-90%) have epithelial changes of the vagina and cervix. Although these changes are histologically benign, it is not known whether they are a precursor of vaginal malignancy. Male children so exposed may develop urogenital tract abnormalities. Although similar data are not available on other estrogens, it cannot be presumed that they would not induce similar changes. Increased risk of congenital anomalies, including heart and limb defects, has been reported following use of sex hormones, including OCs, in pregnancy. One case-control study estimated a 4.7-fold increased relative risk of limb-reduction defects in infants exposed *in utero* to sex hormones (OCs, hormonal withdrawal tests for pregnancy or attempted treatment for threatened abortion). Some exposures involved only a few days of treatment. Data suggest risk of limb-reduction defects in exposed fetuses is somewhat less than 1/1000 live births. In a large prospective study, cardiovascular defects in children born to women who received female hormones, including OCs, during early pregnancy occurred at 18.2/1000 births, compared to 7.8/1000 for children not so exposed *in utero*. These results are statistically significant. A Welsh study found a statistically significant excess of neural tube defects among offspring of prior OC users (within 3 months) than among controls. The incidence of twin births may be increased for women who conceive shortly after discontinuing OC use. In the past, female sex hormones were used during pregnancy in an attempt to treat threatened or habitual abortion. There is evidence that estrogens are ineffective, and there is no evidence from well controlled studies that progestogens are effective for these uses. There is some evidence that triploidy and possibly other types of polyploidy are increased among abortuses from women who become pregnant soon after ceasing OCs. Embryos with these anomalies are virtually always aborted spontaneously. Whether there is an overall increase in spontaneous abortion of pregnancies conceived soon after stopping OCs is unknown. If the patient has not adhered to the prescribed schedule, consider possible pregnancy at the first missed period (or 45 days from the last menstrual period if progestogen-only OCs are used) and discontinue OC use until pregnancy has been ruled out. For any patient who has missed two consecutive periods, rule out pregnancy before continuing the OC. If pregnancy is confirmed, tell the patient about potential risks to the fetus and discuss advisability of continuing the pregnancy. Women who discontinue OCs to become pregnant should use an alternate form of contraception for a period of time before attempting to conceive. A 3-month period is supported by a study suggesting increased frequency of neural tube defects in women impregnated during the first 3 months after cessation of OC use. Do not use progestogen-only or progestogen-estrogen combinations to induce withdrawal bleeding as a pregnancy test. 6. *Gall Bladder Disease*: Studies report increased risk of gall bladder disease in OC or estrogen users. In one study, an increased risk appeared after 2 years of use and doubled after 4-5 years. In another study, an increased risk was apparent between 6 and 12 months. 7. *Carbohydrate and Lipid Metabolic Effects*: Because a decrease in glucose tolerance has been observed in a significant percentage of patients on OCs, prediabetic and diabetic OC users should be carefully observed. An increase in triglycerides and total phospholipids has been observed in OC users but its clinical significance is unknown. 8. *Elevated Blood Pressure*: An increase in blood pressure has been reported with OC use. Hypertension may occur within a few months of beginning OCs. In the first year of use, incidence of hypertension may be no higher in OC users than in nonusers. Incidence in users increases with exposure and in the fifth year of use is 2.5-3 times that in the first year. Age is strongly correlated with hypertension in OC users. Women with a history of elevated blood pressure (hypertension), preexisting renal disease, history of toxemia or elevated blood pressure during pregnancy, familial tendency to hypertension or its consequences," or history of excessive weight gain or fluid retention during the menstrual cycle may be more likely to develop elevated blood pressure when given OCs and should be monitored closely. Even though elevated blood pressure may remain within the "normal" range, closely watch elevations, particularly for women with other risk factors for cardiovascular disease or stroke. High blood pressure may or may not persist after OC discontinuation. 9. *Headache*: Discontinue OC and evaluate the cause of onset or exacerbation of migraine or development of a new pattern of headache which is recurrent, persistent, or severe. 10. *Bleeding Irregularities*: Breakthrough bleeding, spotting, and missed menses often make users discontinue OCs. In breakthrough bleeding, as in all cases of irregular bleeding from the vagina, consider nonfunctional causes. In undiagnosed persistent or recurrent abnormal bleeding from the vagina, use adequate diagnostic measures to rule out pregnancy or malignancy. If pathology has been excluded, time or another formulation may solve the problem. While potentially useful in minimizing menstrual irregularity, change to an OC with a higher estrogen content only if necessary since this may increase the risk of thromboembolic disease. Women with a history of oligomenorrhea or secondary amenorrhea or young women without regular cycles may tend to remain anovulatory or to become amenorrheic after OC discontinuation. Women with these preexisting problems should be advised of this and encouraged to use other contraceptive methods. Post-use anovulation, possibly prolonged, may occur in women without previous irregularities. A higher incidence of galactorrhea and of pituitary tumors (e.g., adenomas) has been associated with amenorrhea in former users compared with nonusers. One study reported a 16-fold increased incidence of pituitary prolactin-secreting tumors among patients with postpill amenorrhea when galactorrhea was present. 11. *Infertility*: There is evidence of impairment of fertility in women discontinuing OCs in comparison with other contraceptive methods, which appears to be independent of duration of use. While impairment diminishes with time, there is an appreciable difference in the results in nulliparous women for OC and other groups 30 months after discontinuation of birth control. For parous women the difference is not apparent 30 months after cessation of contraception. 12. *Ectopic Pregnancy*: Ectopic as well as intrauterine pregnancy may occur in OC failure. In prugestogen-only OC failures, the ratio of ectopic to intrauterine pregnancies is higher than in nonusers, since the drugs are more effective in preventing intrauterine than ectopic pregnancies. 13. *Breast Feeding*: OCs in the postpartum period may interfere with lactation by decreasing quantity and quality of breast milk. A small fraction of OC hormonal agents has been identified in milk of mothers receiving OCs. Effects, if any, on the breast-fed child have not been determined. If feasible, defer OC use until the infant has been weaned.

**Precautions** *GENERAL*: 1. Take a complete medical and family history before starting OCs. Pretreatment and periodic physical exams should include special reference to blood pressure, breasts, abdomen and pelvic organs, including Papanicolaou smear and relevant lab tests. As a general rule, OCs should not be prescribed for longer than 1 year without another physical. 2. Under the influence of estrogen-progestogen preparations, preexisting uterine leiomyomata may enlarge. 3. Observe patients with a history of psychic depression and discontinue OCs if depression recurs to a serious degree. Patients becoming significantly depressed while taking OCs should stop the OC and use an alternate method of contraception to determine whether the symptom is drug related. 4. OCs may cause some fluid retention. Prescribe with caution, and only with careful monitoring, in patients with conditions that might be aggravated by fluid retention, such as convulsive disorders, migraine syndrome, asthma or cardiac, hepatic or renal insufficiency. 5. Patients with a past history of jaundice during pregnancy have an increased risk of recurrence while using OCs. Discontinue OC if jaundice develops. 6. Steroid hormones may be poorly metabolized in patients with impaired liver function and should be administered with caution in such patients. 7. OC users may have disturbances in normal tryptophan metabolism that may result in a relative pyridoxine deficiency. The clinical significance is unknown. 8. Serum folate levels may be depressed by OC use. Since the pregnant woman is predisposed to folate deficiency and incidence of folate deficiency increases with increasing gestation, if a woman becomes pregnant shortly after stopping OCs, she may have a greater chance of developing folate deficiency and related complications. 9. Advise the pathologist of OC use when relevant specimens are submitted. 10. Certain endocrine and liver function tests and blood components may be affected by estrogen-containing OCs. For example: a. Increased sulfobromophthalein retention. b. Increased prothrombin and factors VII, VIII, IX, and X; decreased antithrombin 3; increased norepinephrine-induced platelet aggregability. c. Increased thyroid binding globulin (TBG) leading to increased circulating total thyroid hormone, as measured by protein-bound iodine (PBI), T4 by column, or T4 by radioimmunoassay. Free T3 resin uptake is decreased, reflecting the elevated TBG; free T4 concentration is unaltered. d. Decreased pregnanediol excretion. e. Reduced response to metyrapone test. f. Increased phospholipids and triglycerides. g. Temporarily decreased glucose tolerance. 11. Contact lens wearers who develop visual changes or changes in lens tolerance should be assessed by an ophthalmologist and temporary or permanent cessation of wear considered. DRUG INTERACTIONS. OCs may be less effective and there may be increased breakthrough bleeding from interactions with rifampin, isoniazid, ampicillin, tetracycline, neomycin, penicillin V, chloramphenicol, sulfonamides, nitrofurantoin, barbiturates, phenytoin, primidone, analgesics, tranquilizers, antimigraine preparations, antihistamines, and griseofulvin. OCs may alter effectiveness of such other drugs as oral anticoagulants, anticonvulsants, tricyclic antidepressants, antihypertensive agents (e.g., guanethidine), vitamins, hypoglycemic agents, tranquilizers, hypnotic preparations, theophylline, and beta blockers. *CARCINOGENESIS* See Warnings. *PREGNANCY* Pregnancy category X. See Contraindications and Warnings. *NURSING MOTHERS* See Warnings.

**Adverse Reactions** An increased risk of the following serious adverse reactions has been associated with OC use (see Warnings): thrombophlebitis, thrombosis, pulmonary embolism, coronary thrombosis, cerebral thrombosis, mesenteric thrombosis, liver tumors, cerebral hemorrhage, hypertension, gall bladder disease, congenital anomalies, neuro-ocular lesions, e.g., retinal thrombosis and optic neuritis, Raynaud's disease, arterial thromboembolism. The following adverse reactions have been reported in OC users and are believed to be drug related: bleeding irregularities (breakthrough bleeding, spotting, missed menses during treatment, amenorrhea after treatment), gastrointestinal symptoms, (nausea, vomiting, bloating, abdominal cramps, colitis), dysmenorrhea, infertility after discontinuance of treatment, edema, chloasma or melasma which may persist after drug is discontinued, breast changes (tenderness, enlargement, and secretion), intolerance to contact lenses, changes in corneal curvature (steepening), change in weight (increase or decrease), change in cervical erosion and cervical secretion, possible diminution of lactation when given immediately postpartum, cholestatic jaundice, migraine, increase in size of uterine leiomyomata, rash (allergic), mental depression, reduced tolerance to carbohydrates, vaginal candidiasis, prolactin-secreting pituitary tumors, chilblains. The following adverse reactions have been reported in OC users and the association has been neither confirmed nor refuted: premenstrual-like syndrome, cataracts, changes in libido, chorea, changes in appetite, cystitis-like syndrome, headache, nervousness, dizziness, hirsutism, loss of hair, erythema multiforme, erythema nodosum, hermorrhagic eruptions, vaginitis, porphyria, impaired renal function, malignant nephrosclerosis (hemolytic uremic syndrome), malignant hypertension, acute renal failure. **Information for the Patient** (See Patient Package Insert).

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Family Planning

# Perspectives

Volume 20, Number 6, November/December 1988

## 20th Anniversary Issue

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LOESTRIN® Fe 1.5/30

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**LOESTRIN® 21**
(Norethindrone Acetate and Ethinyl Estradiol Tablets, USP)

**LOESTRIN® Fe**
(Norethindrone Acetate and Ethinyl Estradiol Tablets, USP and Ferrous Fumarate Tablets, USP)

**Before prescribing, please see full prescribing information. A Brief Summary follows:**
**INDICATIONS AND USAGE:** Loestrin 21 and Loestrin Fe are indicated for the prevention of pregnancy in women who elect to use oral contraceptives (OCs) as a method of contraception. **Dose-Related Risk of Thromboembolism from Oral Contraceptives:** Two studies have shown a positive association between the dose of estrogens in oral contraceptives and the risk of thromboembolism. For this reason, it is prudent and in keeping with good principles of therapeutics to minimize exposure to estrogen. The OC product prescribed for any given patient should be that product which contains the least amount of estrogen that is compatible with an acceptable pregnancy rate and patient acceptance. It is recommended that new acceptors of OCs be started on preparations containing 0.05 mg or less of estrogen. **CONTRAINDICATIONS:** OCs should not be used in women with any of the following conditions: 1. Thrombophlebitis or thromboembolic disorders; 2. A past history of deep vein thrombophlebitis or thromboembolic disorders; 3. Cerebral vascular or coronary artery disease; 4. Known or suspected carcinoma of the breast; 5. Known or suspected estrogen-dependent neoplasia; 6. Undiagnosed abnormal genital bleeding; 7. Known or suspected pregnancy (see Warning No. 5); 8. Benign or malignant liver tumor which developed during the use of oral contraceptives or other estrogen-containing products.

**WARNINGS**

> **Cigarette smoking increases the risk of serious cardiovascular side effects from oral contraceptive use. This risk increases with age and with heavy smoking (15 or more cigarettes per day) and is quite marked in women over 35 years of age. Women who use oral contraceptives should be strongly advised not to smoke.**
>
> The use of oral contraceptives is associated with increased risk of several serious conditions including thromboembolism, stroke, myocardial infarction, hepatic adenoma, gallbladder disease, and hypertension. Practitioners prescribing oral contraceptives should be familiar with the following information relating to these risks.

1. *Thromboembolic Disorders and Other Vascular Problems:* An increased risk of thromboembolic and thrombotic disease associated with the use of OCs is well established. Three principal studies in Great Britain and three in the United States have demonstrated an increased risk of fatal and nonfatal venous thromboembolism and stroke, both hemorrhagic and thrombotic. These studies estimate that users of OCs are 4 to 11 times more likely than nonusers to develop these diseases without evident cause. **Cerebrovascular Disorders:** In a collaborative American study of cerebrovascular disorders in women with and without predisposing causes, it was estimated that the risk of hemorrhagic stroke was 2.0 times greater in users than in nonusers and the risk of thrombotic stroke was 4 to 9.5 times greater in users than in nonusers. **Myocardial Infarction:** An increased risk of myocardial infarction associated with the use of OCs has been reported, confirming a previously suspected association. These studies, conducted in the United Kingdom, found, as expected, that the greater the number of underlying risk factors for coronary artery disease (cigarette smoking, hypertension, hypercholesterolemia, obesity, diabetes, history of preeclamptic toxemia), the higher the risk of developing myocardial infarction, regardless of whether the patient was an OC user or not. OCs, however, were found to be a clear additional risk factor. In terms of relative risk, it has been estimated that OC users who do not smoke (smoking is considered a major predisposing condition to myocardial infarction) are about twice as likely to have a fatal myocardial infarction as nonusers who do not smoke. OC users who are also smokers have about a 5-fold increased risk of fatal infarction compared to users who do not smoke, but about a 10- to 12-fold increased risk compared to nonusers who do not smoke. Furthermore, the amount of smoking is also an important factor. In determining the importance of these relative risks, however, the baseline rates for various age groups must be given serious consideration. The importance of other predisposing conditions mentioned above in determining relative and absolute risks has not as yet been quantified; it is quite likely that the same synergistic action exists, but perhaps to a lesser extent. **Risk of Dose:** In an analysis of data derived from several national adverse reaction reporting systems, British investigators concluded that the risk of thromboembolism, including coronary thrombosis, is directly related to the dose of estrogen used in oral contraceptives. Preparations containing 100 mcg or more of estrogen were associated with a higher risk of thromboembolism than those containing 50 to 80 mcg of estrogen. Their analysis did suggest, however, that the quantity of estrogen may not be the sole factor involved. This finding has been confirmed in the United States. Careful epidemiological studies to determine the degree of thromboembolic risk associated with progestogen-only OCs have not been performed. Cases of thromboembolic disease have been reported in women using these products, and they should not be presumed to be free of excess risk. **Persistence of Risk:** In confirmation of earlier reports, two studies have suggested that an increased risk may persist for as long as 6 years after discontinuation of oral contraceptive use for cerebrovascular disease and 9 years for myocardial infarction. In addition, a prospective study suggested the persistence of risk for subarachnoid hemorrhage. **Estimate of Excess Mortality from Circulatory Diseases:** A large prospective study carried out in the U.K. estimated the mortality rate per 100,000 women per year from diseases of the circulatory system for users and nonusers of OCs according to age, smoking habits, and duration of use. The overall excess death rate annually from circulatory diseases for OC users was estimated to be 20 per 100,000 (ages 15 to 34 – 5/100,000; ages 35 to 44 – 33/100,000; ages 45 to 49 – 140/100,000), the risk being concentrated in older women, in those with a long duration of use, and in cigarette smokers. It was not possible, however, to examine the interrelationships of age, smoking, and duration of use, nor to compare the effects of continuous versus intermittent use. Although the study showed a 10-fold increase in death due to circulatory diseases in users for 5 or more years, all of these deaths occurred in women 35 or older. Until larger numbers of women under 35 with continuous use for 5 or more years are available, it is not possible to assess the magnitude of the relative risk for this younger age group. The available data from a variety of sources have been analyzed to estimate the risk of death associated with various methods of contraception. The estimates of risk of death for each method include the combined risk of the contraceptive method (eg, thromboembolic and thrombotic disease in the case of oral contraceptives) plus the risk attributable to pregnancy or abortion in the event of method failure. This latter risk varies with the effectiveness of the contraceptive method. The study concluded that the mortality associated with all methods of birth control is low and below that associated with childbirth, with the exception of OCs in women over 40 who smoke. (The rates given for pill only/smokers for each age group are for smokers as a class. For "heavy" smokers [more than 15 cigarettes a day] the rates given would be about double; for "light" smokers [less than 15 cigarettes a day] about 50 percent.) The lowest mortality is associated with the condom or diaphragm backed up by early abortion. The risk of thromboembolic and thrombotic disease associated with OCs increases with age after approximately age 30 and, for myocardial infarction, is further increased by hypertension, hypercholesterolemia, obesity, diabetes, or history of preeclamptic toxemia and especially by cigarette smoking. The physician and the patient should be alert to the earliest manifestations of thromboembolic and thrombotic disorders (eg, thrombophlebitis, pulmonary embolism, cerebrovascular insufficiency, coronary occlusion, retinal thrombosis, and mesenteric thrombosis). Should any of these occur or be suspected, the drug should be discontinued immediately. A four- to six-fold increased risk of postsurgery thromboembolic complications has been reported in OC users. If feasible, OCs should be discontinued at least 4 weeks before surgery of a type associated with an increased risk of thromboembolism or prolonged immobilization. 2. *Ocular Lesions:* There have been reports of neuro-ocular lesions, such as optic neuritis or retinal thrombosis, associated with the use of OCs. Discontinue OC medication if there is unexplained, sudden or gradual, partial or complete loss of vision; onset of proptosis or diplopia; papilledema; or retinal vascular lesions, and institute appropriate diagnostic and therapeutic measures. 3. *Carcinoma:* Long-term continuous administration of either natural or synthetic estrogen in certain animal species increases the frequency of carcinoma of the breast, cervix, vagina, and liver. Certain synthetic progestogens, none currently contained in OCs, have been noted to increase the incidence of mammary nodules, benign and malignant, in dogs. In humans, three case control studies have reported an increased risk of endometrial carcinoma associated with the prolonged use of exogenous estrogen in postmenopausal women. One publication reported on the first 21 cases submitted by physicians to a registry of cases of adenocarcinoma of the endometrium in women under 40 on OCs. Of the cases found in women without predisposing risk factors for adenocarcinoma of the endometrium (eg, irregular bleeding at the time OCs were first given, polycystic ovaries), nearly all occurred in women who had used a sequential OC. These products are no longer marketed. No evidence has been reported suggesting an increased risk of endometrial cancer in users of conventional combination or progestogen-only OCs. Several studies have found no increase in breast cancer in women taking OCs or estrogens. One study, however, while also noting no overall increased risk of breast cancer in women treated with OCs, found an excess risk in the subgroups of OC users with documented benign breast disease. A reduced occurrence of benign breast tumors in users of OCs has been well-documented. In summary, there is at present no confirmed evidence from human studies of an increased risk of cancer associated with OCs. Close clinical surveillance of all women taking OCs is, nevertheless, essential. In all cases of undiagnosed persistent or recurrent abnormal vaginal bleeding, appropriate diagnostic measures should be taken to rule out malignancy. Women with a strong family history of breast cancer or who have breast nodules, fibrocystic disease or abnormal mammograms should be monitored with particular care if they elect to use OCs instead of other methods of contraception. 4. *Hepatic Tumors:* Benign hepatic adenomas have been found to be associated with the use of OCs. One study showed that OC formulations with high hormonal potency were associated with a higher risk than lower potency formulations. Although benign, hepatic adenomas may rupture and may cause death through intra-abdominal hemorrhage. This has been reported in short-term as well as long-term users of OCs. Two studies relate risk with duration of use of the contraceptive, the risk being much greater after 4 or more years of OC use. While hepatic adenoma is a rare lesion, it should be considered in women presenting abdominal pain and tenderness, abdominal mass or shock. A few cases of hepatocellular carcinoma have been reported in women taking oral contraceptives. The relationship of these drugs to this type of malignancy is not known at this time. 5. *Use in or Immediately Preceding Pregnancy, Birth Defects in Offspring, and Malignancy in Female Offspring:* The use of female sex hormones – both estrogenic and progestational agents – during early pregnancy may seriously damage the offspring. It has been shown that females exposed *in utero* to diethylstilbestrol, a nonsteroidal estrogen, have an increased risk of developing in later life a form of vaginal or cervical cancer that is ordinarily extremely rare. This risk has been estimated to be of the order of 1 in 1,000 exposures or less. Although there is no evidence at the present time that OCs further enhance the risk of developing this type of malignancy, such patients should be monitored with particular care if they elect to use OCs instead of other methods of contraception. Furthermore, a high percentage of such exposed women (from 30% to 90%) have been found to have epithelial changes of the vagina and cervix. Although these changes are histologically benign, it is not known whether this condition is a precursor of vaginal malignancy. Male children so exposed may develop abnormalities of the urogenital tract. Although similar data are not available with the use of other estrogens, it cannot be presumed that they would not induce similar changes. An increased risk of congenital anomalies, including heart defects and limb defects, has been reported with the use of sex hormones, including OCs, in pregnancy. One case control study has estimated a 4.7-fold increase in risk of limb reduction defects in infants exposed *in utero* to sex hormones (OCs, hormonal withdrawal tests for pregnancy or attempted treatment for threatened abortion). Some of these exposures were very short and involved only a few days of treatment. The data suggest that the risk of limb-reduction defects in exposed fetuses is somewhat less than 1 in 1,000 live births. In the past, female sex hormones have been used during pregnancy in an attempt to treat threatened or habitual abortion. There is considerable evidence that estrogens are ineffective for these indications, and there is no evidence from well-controlled studies that progestogens are effective for these uses. There is some evidence that triploidy and possibly other types of polyploidy are increased among abortuses from women who become pregnant soon after ceasing OCs. Embryos with these anomalies are virtually always aborted spontaneously. Whether there is an overall increase in spontaneous abortion of pregnancies conceived soon after stopping OCs is unknown. It is recommended that for any patient who has missed two consecutive periods, pregnancy should be ruled out before continuing the contraceptive regimen. If the patient has not adhered to the prescribed schedule, the possibility of pregnancy should be considered at the time of the first missed period, and further use of OCs should be withheld until pregnancy has been ruled out. If pregnancy is confirmed, the patient should be apprised of the potential risks to the fetus and the advisability of continuation of the pregnancy should be discussed in the light of these risks. It is also recommended that women who discontinue oral contraceptives with the intent of becoming pregnant use an alternate form of contraception for a period of time before attempting to conceive. Many clinicians recommend 3 months although no precise information is available on which to base this recommendation. The administration of progestogen-only or progestogen-estrogen combinations to induce withdrawal bleeding should not be used as a test of pregnancy. 6. *Gallbladder Disease:* Studies report an increased risk of surgically confirmed gallbladder disease in users of OCs and estrogens. In one study, an increased risk appeared after 2 years of use and doubled after 4 or 5 years of use. In one of the other studies, an increased risk was apparent between 6 and 12 months of use. 7. *Carbohydrate and Lipid Metabolic Effects:* A decrease in glucose tolerance has been observed in a significant percentage of patients on OCs. For this reason, prediabetic and diabetic patients should be carefully observed while receiving OCs. An increase in triglycerides and total phospholipids has been observed in patients receiving OCs. The clinical significance of this finding remains to be defined. 8. *Elevated Blood Pressure:* An increase in blood pressure has been reported in patients receiving OCs. In some women, hypertension may occur within a few months of beginning OC use. In the first year of use, the prevalence of women with hypertension is low in users and may be no higher than that of a comparable group of nonusers. The prevalence in users increases, however, with longer exposure, and in the fifth year of use is two and a half to three times the reported prevalence in the first year. Age is also strongly correlated with the development of hypertension in OC users. Women who previously have had hypertension during pregnancy may be more likely to develop elevation of blood pressure when given OCs. Hypertension that develops as a result of taking OCs usually returns to normal after discontinuing the drug. 9. *Headache:* The onset or exacerbation of migraine or development of headache of a new pattern which is recurrent, persistent, or severe, requires discontinuation of OCs and evaluation of the cause. 10. *Bleeding Irregularities:* Breakthrough bleeding, spotting and amenorrhea are frequent reasons for patients discontinuing OCs. In breakthrough bleeding, as in all cases of irregular bleeding from the vagina, nonfunctional causes should be borne in mind. In undiagnosed persistent or recurrent abnormal bleeding from the vagina, adequate diagnostic measures are indicated to rule out pregnancy or malignancy. If pathology has been excluded, time or a change to another formulation may solve the problem. Changing to an OC with a higher estrogen content, while potentially useful in minimizing menstrual irregularity, should be done only if necessary since this may increase the risk of thromboembolic disease. Women with a past history of oligomenorrhea or secondary amenorrhea or young women without regular cycles may have a tendency to remain anovulatory or to become amenorrheic after discontinuation of OCs. Women with these preexisting problems should be advised of this possibility and encouraged to use other contraceptive methods. Post-use anovulation, possibly prolonged, may also occur in women without previous irregularities. 11. *Ectopic Pregnancy:* Ectopic as well as intrauterine pregnancy may occur in contraceptive failures. However, in progestogen-only OC failures, the ratio of ectopic to intrauterine pregnancies is higher than in women who are not receiving OCs, since the drugs are more effective in preventing intrauterine than ectopic pregnancies. 12. *Breast Feeding:* OCs given in the postpartum period may interfere with lactation. There may be a decrease in the quantity and quality of the breast milk. Furthermore, a small fraction of the hormonal agents in OCs has been identified in the milk of mothers receiving these drugs. The effects, if any, on the breast-fed child have not been determined. If feasible, the use of OCs should be deferred until the infant has been weaned. **PRECAUTIONS: General:** 1. A complete medical and family history should be taken prior to the initiation of OCs. The pretreatment and periodic physical examinations should include special reference to blood pressure, breasts, abdomen and pelvic organs, including Papanicolaou smear and relevant laboratory tests. As a general rule, OCs should not be prescribed for longer than 1 year without another physical examination being performed. 2. Under the influence of estrogen-progestogen preparations preexisting uterine leiomyomata may increase in size. 3. Patients with a history of psychic depression should be carefully observed and the drug discontinued if depression recurs to a serious degree. Patients becoming significantly depressed while taking OCs should stop the medication and use an alternate method of contraception in an attempt to determine whether the symptom is drug related. 4. OCs may cause some degree of fluid retention. They should be prescribed with caution, and only with careful monitoring, in patients with conditions which might be aggravated by fluid retention, such as convulsive disorders, migraine syndrome, asthma, or cardiac or renal insufficiency. 5. Patients with a past history of jaundice during pregnancy have an increased risk of recurrence of jaundice while receiving OC therapy. If jaundice develops in any patient receiving such drugs, the medication should be discontinued. 6. Steroid hormones may be poorly metabolized in patients with impaired liver function and should be administered with caution in such patients. 7. OC users may have disturbances in normal tryptophan metabolism which may result in a relative pyridoxine deficiency. The clinical significance of this is yet to be determined. 8. Serum folate levels may be depressed by OC therapy. Since the pregnant woman is predisposed to the development of folate deficiency and the incidence of folate deficiency increases with increasing gestation, it is possible that if a woman becomes pregnant shortly after stopping OCs, she may have a greater chance of developing folate deficiency and complications attributed to this deficiency. 9. The pathologist should be advised of OC therapy when relevant specimens are submitted. 10. Certain endocrine and liver function tests and blood components may be affected by estrogen-containing OCs: a. Increased sulfobromophthalein retention. b. Increased prothrombin and factors VII, VIII, IX, and X; decreased antithrombin 3; increased norepinephrine-induced platelet aggregability. c. Increased thyroid binding globulin (TBG) leading to increased circulating total thyroid hormone, as measured by protein bound iodine (PBI), T4 by column, or T4 by radioimmunoassay. Free T3 resin uptake is decreased, reflecting the elevated TBG; free T4 concentration is unaltered. d. Decreased pregnanediol excretion. e. Reduced response to metyrapone test. **INFORMATION FOR THE PATIENT:** See Patient Labeling. **DRUG INTERACTIONS:** Reduced efficacy and increased incidence of breakthrough bleeding have been associated with concomitant use of rifampin. A similar association has been suggested with barbiturates, phenylbutazone, phenytoin sodium, tetracycline, and ampicillin. **CARCINOGENESIS, PREGNANCY, NURSING MOTHERS:** See Contraindications and Warnings sections. **ADVERSE REACTIONS:** An increased risk of the following serious adverse reactions has been associated with the use of OCs (see Warnings): Thrombophlebitis; pulmonary embolism; coronary thrombosis; cerebral thrombosis; cerebral hemorrhage; hypertension; gallbladder disease; benign hepatomas; congenital anomalies. There is evidence of an association between the following conditions and the use of OCs, although additional confirmatory studies are needed: Mesenteric thrombosis; neuro-ocular lesions, eg, retinal thrombosis and optic neuritis. The following adverse reactions have been reported in patients receiving OCs and are believed to be drug related: Nausea and/or vomiting, usually the most common adverse reactions, occur in approximately 10 percent or less of patients during the first cycle. Other reactions, as a general rule, are seen much less frequently or only occasionally: Gastrointestinal symptoms (such as abdominal cramps and bloating); breakthrough bleeding; spotting; change in menstrual flow; dysmenorrhea; amenorrhea during and after treatment; temporary infertility after discontinuance of treatment; edema; chloasma or melasma which may persist; breast changes: tenderness, enlargement and secretion; change in weight (increase or decrease); change in cervical erosion and cervical secretion; possible diminution in lactation when given immediately postpartum; cholestatic jaundice; migraine; increase in size of uterine leiomyomata; rash (allergic); mental depression; reduced tolerance to carbohydrates; vaginal candidiasis; change in corneal curvature (steepening); intolerance to contact lenses. The following adverse reactions have been reported in users of OCs, and the association has been neither confirmed nor refuted: Premenstrual-like syndrome; cataracts; changes in libido; chorea; changes in appetite; cystitis-like syndrome; headache; nervousness; dizziness; hirsutism; loss of scalp hair; erythema multiforme; erythema nodosum; hemorrhagic eruption; vaginitis; porphyria; hemolytic uremic syndrome. **ACUTE OVERDOSE:** Serious ill effects have not been reported following acute ingestion of large doses of OCs by young children. Overdosage may cause nausea, and withdrawal bleeding may occur in females. **HOW SUPPLIED:** Loestrin **21** 1/20 is available in dispensers each containing 21 tablets. Each tablet contains 1 mg of norethindrone acetate and 20 mcg of ethinyl estradiol. Available in packages of five dispensers. Loestrin **Fe** 1/20 is available in dispensers each containing 21 white tablets and 7 brown tablets. Each white tablet contains 1 mg of norethindrone acetate and 20 mcg of ethinyl estradiol. Each brown tablet contains 75 mg ferrous fumarate. Available in packages of five dispensers. Loestrin **21** 1.5/30 is available in dispensers each containing 21 tablets. Each tablet contains 1.5 mg of norethindrone acetate and 30 mcg of ethinyl estradiol. Available in packages of five dispensers. Loestrin **Fe** 1.5/30 is available in dispensers each containing 21 green tablets and 7 brown tablets. Each green tablet contains 1.5 mg of norethindrone acetate and 30 mcg of ethinyl estradiol. Each brown tablet contains 75 mg ferrous fumarate. Available in packages of five dispensers.

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Family Planning
# Perspectives

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Volume 20, Number 6, November/December 1988

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## Milestones

**The cover of the first issue of *Perspectives* showed a triumphant Margaret Sanger, outfitted by artist David Levine in flapper costume, hands on hips, casting her shadow over Louisiana. It was in this poverty-stricken, heavily Catholic and racially divided state, where the dissemination of birth control information had been a felony, that the first statewide family planning program was successfully initiated. Our lead article described this program, how it was organized and how it managed, within just a few years of its inception, to reach most of the poor women in Louisiana who needed birth control help as well as prenatal and maternity care. The first numbers of *Perspectives* set the mold for many of the issues that still concern us: the safety of oral contraceptives; the unmet need for publicly funded family planning services; laws and policies affecting services for teenagers; the legislative battle to get congressional approval of a national family planning program; progress and lack of progress in reproductive and demographic research; the struggle to change abortion laws; and the progress and problems involved in developing family planning programs in Third World countries. Our first issue also began that jewel in our crown, the "Digest" section, then dubbed, somewhat unimaginatively, "Current Literature."**

FAMILY PLANNING
Perspectives

View from Louisiana
View from Washington: Reorganization, Consolidation—or Both?
Birth Control, Teenagers and the Law

**By the time we had completed our 10th year, Levine's Margaret Sanger had graduated to circus star, propelled from a trampoline shaped like a diaphragm (Ms. Sanger's favored method, as it placed the birth control decision in the hands of the woman). Indeed, the intervening decade had taken us a giant leap ahead, as seen in the pages of *Perspectives*: The Supreme Court had declared the choice of abortion a woman's constitutional right, and new methods of inducing abortion had made the procedure extraordinarily safe; Congress had passed the first national family planning law, the goal of which was the provision of government-subsidized family planning services to all those in need of them—including unmarried teenagers. Indeed, the problem of teenage pregnancy had already so gripped the nation that we devoted a whole issue to the subject. Hardly an issue of the magazine had appeared without at least one article on teenage pregnancy or contraceptive use, on abortion services, laws and policies, and on the most effective ways to deliver the family planning services now being funded by the federal government. Hopes were high for the development of revolutionary new contraceptives, even as concerns began to arise about safety problems with the current crop of modern birth control methods. Surveys of contraceptive use in the United States began to show a remarkable shift in contraceptive choice toward sterilization. A burgeoning U.S. population assistance program appeared to be bearing fruit, as the pace of rapid population growth began to decline in several developing countries.**

Family Planning
Perspectives
Volume 11, Number 1, January/February 1979

The Impact of Premarital Pregnancy on Family Earnings and Assets
Women Who Obtain Repeat Abortions: A Study Based on Record Linkage
Family Planning Availability and Contraceptive Practice
Marriage, Remarriage, Marital Disruption and Age at First Birth

Tenth Anniversary Issue

**As Levine's Margaret Sanger paints a 20th anniversary poster on our current cover (painting was her main hobby after her retirement in Tucson), we see that the preceding 10 years have shown both continued progress and some steps backwards. Indeed, in this, her 120th year, and three-quarters of a century after she coined the term "birth control," Margaret Sanger would probably be shaking her head and muttering, "Won't people ever learn?"**

**In the current issue, nine leaders in various areas of the reproductive health field look back at the successes and setbacks of the past two decades, assess the current situation and speculate on the future. These are some of their main themes:**

- **Although the level of unwanted childbearing has declined in this country, the rate of unintended pregnancies, often terminated by abortion, continues to be disturbingly high. Charles Westoff examines why the incidence of unintended pregnancy is so much higher in the United States than in comparable industrialized countries, and why this difference is restricted to young women. He attributes the problem to the existence in the United States of a large underclass that is alienated from middle-class values, and to a greater propensity for risk-taking and a greater ambivalence about sexuality among Americans in general.**
- **Teenage pregnancy and childbearing have been especially recalcitrant problems in this country, made more difficult to solve by the sharp rise in sexual activity that occurred among adolescents during the 1970s, and by the increasing emphasis that has been put on curtailing teenage sexuality rather than on providing greater access to sex education and contraceptive services. As James Trussell points out, comparable industrialized countries with levels of teenage sexual activity similar to our own have achieved much lower teenage abortion rates and birthrates, because they have emphasized increasing access to preventive birth control services rather than getting young people to "just say no."**

Family Planning
Perspectives
Volume 20, Number 5, November/December 1988

20th Anniversary Issue

- **The Supreme Court decisions in 1973 declaring abortion a woman's constitutional right were followed by other deci-**

sions striking down attempts by states to curtail availability of abortion services. The same Court, however, upheld the right of the federal and state governments to refuse to fund abortions for poor women in the same way they fund childbirth. The majority on the Court favoring a liberal interpretation of the right to abortion was whittled down from seven in 1973 to five in 1987, and it is unclear how the current Court will rule on future abortion issues. Abortion remains an extremely controversial political issue. Alice Rossi and Bhavani Sitaraman look at the history, current status and likely future of abortion laws, behavior and attitudes, and speculate on whether the United States will follow the lead of other Western countries toward a more secularized society that features less control by religious and political institutions over private aspects of life.

- Rapid progress was made in the development and use of all methods of fertility control in the late 1960s and early 1970s, but in recent years, as Malcolm Potts points out, things have begun to fall apart. Not only do Americans have a smaller choice of contraceptive methods than couples in comparable countries, but this choice is diminishing rather than expanding. Problems of product liability and opposition by antiabortion groups stand in the way of contraceptive development and marketing in this country.
- Federally supported family planning clinics in the United States have improved the health of the many millions of women who have attended them over the past two decades, and have also brought about reductions in the number of high-risk and unintended births. Joy Dryfoos notes how diminishing funds have resulted in fewer clinic sites and service cutbacks, especially in areas like outreach and counseling; these two service components have been found to be important even where birth control services are free and are available to everyone (as in many European countries).
- Advances in medical science and technology have improved prospects for the childless woman to become pregnant and for the pregnant woman to have a healthy birth outcome. On the other hand, as Kenneth Ryan observes, threats of malpractice suits have pushed many doctors out of obstetrics and have contributed to the growing number of needless, risky cesarean deliveries. Moreover, scientific progress has not sufficiently improved birth outcomes for the poor and minorities, and is not likely to do so without fundamental changes in the health care system and in the social conditions that perpetuate poverty, welfare dependency and inadequate education.
- Out-of-wedlock childbearing and marital dissolution have increased enormously over the past 20 years, making children ever more liable to being brought up in a one-parent family. But as Andrew Cherlin explains, there are profound disagreements over the role of the state in strengthening the family and improving the condition of dependent children.
- After booming in the 1970s, U.S. support for international family planning programs weakened just at the point when such programs appeared to be contributing to declining birthrates in a number of populous Third World countries. One reason for the change, say Peter Donaldson and Charles Keely, has been the Reagan administration's belief that overly rapid population growth is not a real problem—a position contradicting the long-standing economic rationale for U.S. support of family planning programs. Along with administration ideology, persistent budget crunches and opposition from abortion foes have lowered the priority given to U.S. support for international family planning programs.
- By the time *Perspectives* was initiated, there was a broad-based consensus about the need for some kind of government-subsidized family planning program in the United States and abroad. But as Jeannie Rosoff demonstrates in her review of the politics of birth control, many key issues were unclear 20 years ago, and continue to be sources of controversy. Arguments over abortion, services for unmarried teenagers, integration of family planning with other health services, and the role of the federal versus state governments, for example, remain lively and are likely to continue.

*Frederick S. Jaffe*

*Alan F. Guttmacher*

### Two Pioneers

Frederick S. Jaffe was the founder and first president of The Alan Guttmacher Institute, which began in 1968 as an autonomous division of the Planned Parenthood Federation of America and in 1977 became a separate, independent organization. From the start, the mission of the Institute was to utilize the findings of social research to develop effective and humane public policies and programs; and the creation of a journal to identify and communicate with the as yet unformed family planning and reproductive health fields was a cornerstone of that enterprise. Until he died in 1978, Fred Jaffe provided *Perspectives* with leadership, ideas and and many of its most distinguished articles.

In 1968, when the distinguished obstetrician-gynecologist and author Alan F. Guttmacher was president of Planned Parenthood, his eloquence and good sense persuaded a divided Planned Parenthood board to approve the organization of the Institute as an autonomous body (under the name Center for Family Planning Program Development). He was until the time of his death in 1974—when the Institute was named for him—one of the Institute's most stalwart supporters. Like Fred Jaffe, he was also among *Perspectives'* most consistent and outstanding authors.

To the memory of these two pioneers, without whom *Perspectives* and the Institute itself would not be around today, we dedicate this 20th anniversary issue.

*Richard Lincoln,*
*Senior Fellow,*
*The Alan Guttmacher Institute,*
*and Guest Editor,*
*20th Anniversary Issue*

# Unintended Pregnancy in America and Abroad

*By Charles F. Westoff*

**Summary**

U.S. women under age 25 are far more likely to become pregnant than are comparable young women in other developed countries; however, there is no such differential among older women. Young American women appear to be no more likely than their European contemporaries to marry or to engage in intercourse at a young age, but they do seem less likely to practice contraception. Why should this be so? There are grounds to argue that young American women have more limited access to effective contraceptives than do comparable Europeans, but the problem undoubtedly has social and economic aspects as well: No other Western nation has the ethnic and socioeconomic diversity of the United States—a diversity that includes the existence of an underclass alienated from middle-class values. Limited evidence also suggests that young Americans, regardless of social class, may be more prone to risk-taking than young people in other countries. Finally, another attribute of American society that undoubtedly contributes to the problem of high pregnancy rates is our ambivalence toward sexuality: Sex saturates American life—in television programs, movies and advertisements—yet the media generally fail to communicate responsible attitudes toward sex, with birth control remaining a taboo subject. In addition, a deep-seated ambivalence toward sexuality has prevented Americans from responding to the problems of unintended pregnancy as rationally as have other Western nations.

**Although the pregnancy rate among young U.S. women is no longer rising and may soon begin to fall, social and economic differences between the United States and other countries will keep the rate distinctively high for some time to come.**

### Background

Young women in America—those under the age of 25—become pregnant at much higher rates than do their contemporaries in other Western countries. Among adolescents, the difference in pregnancy rates (the sum of birthrates and abortion rates) is dramatic, as Figure 1 shows.* The teenage pregnancy rates in six other Western countries range from only 13 to 53 percent of the U.S. rate. At ages 20–24, the gap closes slightly, but again, young women in Europe and Canada become pregnant only 45–75 percent as often as their counterparts in the United States. By ages 25–29, however, the differences disappear almost completely; all the countries, including the United States, have nearly the same pregnancy rate. There is more variation among 30–44-year-olds, but in this age-group, the United States is in the middle of the range.

The immediately apparent explanation for the disappearance of the pregnancy differential once women enter their late 20s is the greater reliance of American men and women on surgical sterilization after they have realized their desired family size.[1] Contraceptive sterilization has also become increasingly popular in Canada, Britain and the Netherlands, each of which has a pregnancy rate in the older age-groups that is on a par with or below that of U.S. women. It is not wholly clear why sterilization has become the choice of so many older Americans, but the reasons probably include U.S. women's heightened concern about the health implications of pill use and the narrowing of contraceptive choice in 1986 and 1987 as a result of the temporary disappearance of the IUD from the U.S. market. It seems likely, however, that the heavy reliance on sterilization is connected with the high rates of pregnancy among the young. The intriguing question is why the pregnancy rate is so high among U.S. women under 25.

### Possible Explanations

- *Childbearing intentions.* What evidence is there that the higher pregnancy rates among young adults in the United States are intentional? One line of evidence about intentions lies in abortion behavior: Undergoing an abortion is clearly an indicator of unintended pregnancy, and young American women have a higher abortion rate than young European women.[2] But this measure has some serious weaknesses as a comprehensive indicator of unintended pregnancy. First, the likelihood of obtaining an abortion is a function not only of unintended conception, but also of opportunity and of attitude toward the procedure itself. One would certainly not conclude that the proportion of pregnancies terminating in a live birth is an index of the rate of intended pregnancy; that proportion undoubtedly includes a significant fraction of genuinely unintended pregnancies that come to term mainly because the woman regards abortion as unacceptable on various grounds.

Another difficulty with inferring that a high abortion rate indicates a high rate of unintended pregnancy is that it is not really the appropriate statistic with which to make such an inference (even assuming that women in the different countries are equally likely to turn to abortion in the

*(Continued on page 257)*

---

Charles F. Westoff is professor of sociology and demographic studies and director of the Office of Population Research at Princeton University.

*A strikingly higher *birthrate* among U.S. teenagers than among those of other industrialized countres was documented in two studies: K. Davis, 1980 (see reference 25); and C. F. Westoff, G. Calot and A. D. Foster, "Teenage Pregnancy in Developed Nations," *International Family Planning Perspectives,* 9:45, 1983.

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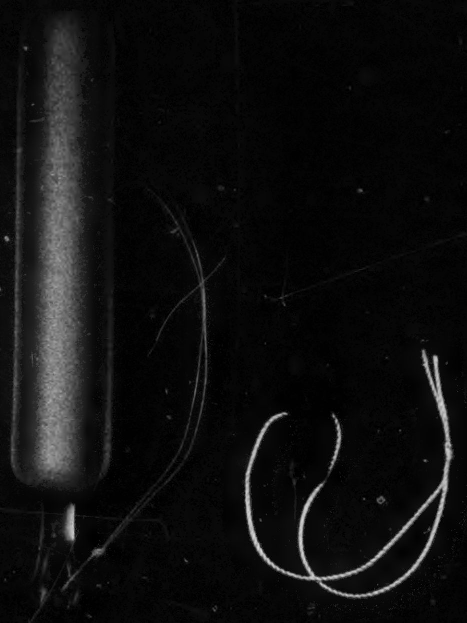

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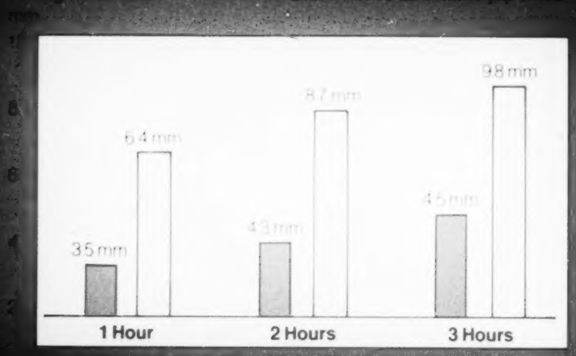

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References:
1. Chvapil M, Droegemueller W, Meyer T, et al. New Synthetic laminaria. Obstet & Gynecol [illegible] 1982
2. Data on file, Gynotech Incorporated, Lebanon, NJ

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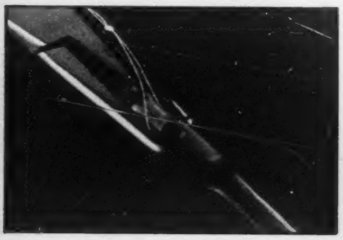

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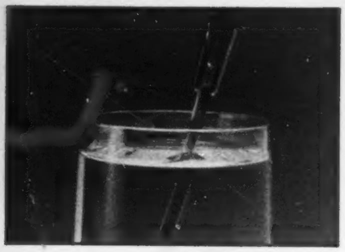

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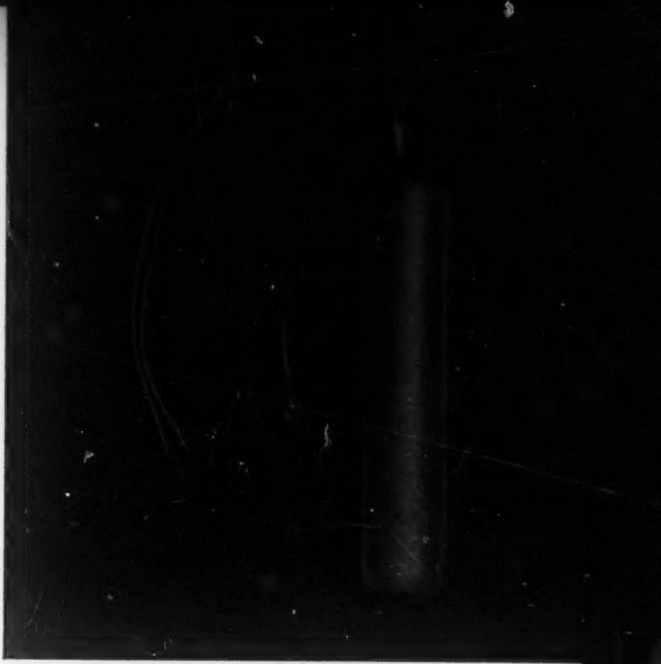

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*(Continued from page 254)*

event of an unintended pregnancy); rather, we should look at the proportion of pregnancies aborted. American teenagers abort nearly half (47 percent) of all their pregnancies, a proportion similar to that seen in the other countries.[3] American adolescents have much higher pregnancy rates than other teenagers, but their propensity to seek abortion is about the same. Thus, if the proportion of pregnancies aborted is an indicator of the extent of unintended pregnancy, one could not conclude that American teenagers are particularly different from teenagers in other Western countries.

However, this picture changes after adolescence. From ages 20 to 34, U.S. women have the highest proportion of pregnancies aborted; there is little difference at ages 35 and above.[4] To the extent that the propensity to abort a pregnancy is an indicator of unintended pregnancy, American women do experience more unintended pregnancies.

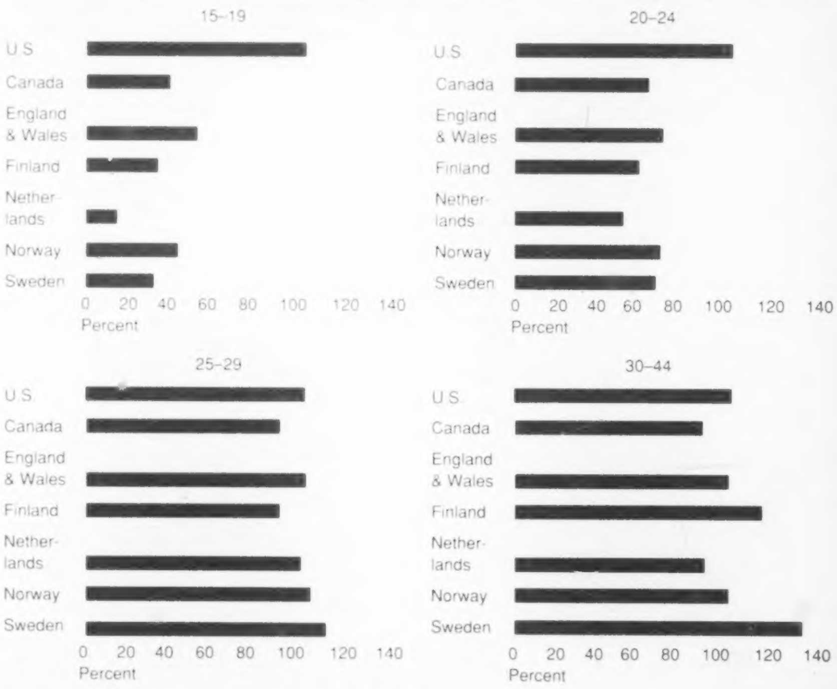
The planning status of a pregnancy cannot always be classified unambiguously, because varying degrees of intention may be involved. At one end of the spectrum are women who become pregnant as a result of a clear contraceptive failure; they, along with women who have engaged in occasional chance-taking by using no method, may regard a pregnancy as a disaster. Then there are cases in which women engage in more or less regular chance-taking in an environment where early or premarital conception or birth are not discouraged, or engage even in semideliberate exposure to risk, when the woman would welcome a baby. At the other extreme are young married women either eager to have a child or at least fully prepared to accept the event as the normal consequence of not trying to postpone pregnancy by contraceptive practice. Our statistical evidence is insensitive to many of these nuances.

Surveys have attempted to classify intention by direct questioning after the fact. Although information obtained in this way is clearly subject to ex post facto rationalization, the tendency presumably would be toward reporting an unplanned pregnancy as planned. Nevertheless, surprisingly high proportions of women typically say that a pregnancy was unplanned. According to a recent study that combined survey data on the planning status of births among women in 10 Western countries with abortion and fertility rates from registration data, the United States (along with France) has the highest unplanned pregnancy rate.[5] About half of all pregnancies are estimated to be unplanned, and more than half of these are aborted.

- *Nuptiality.* One would expect to find high pregnancy rates among youths if women were married at young ages and thus were regularly exposed to the risk of becoming pregnant. The role of marriage, however, is not easy to specify unambiguously. One reason is that pregnancy frequently precedes rather than follows marriage. Another complication is that informal cohabitation has become quite common among young people in this country, and in some ways substitutes for marriage, although there is no evidence that this new institution is more prevalent in America than abroad. The proportions of 15–24-year-old women who are currently married are only slightly higher in the United States today than in other Western nations. Although age at marriage declined dramatically in the United States in the years following World War II,[6] the trend toward later marriage has been steady since 1960. Between 1960 and 1987, the proportion of women who were ever married by ages 20–24 declined from 73 percent to 39 percent.[7] This process has prolonged the period in which women are exposed to the risk of unintended premarital pregnancy. It is true that the likelihood of marriage remains greater for U.S. teenagers than for their Western European counterparts, but the magnitudes are very low.[8] Given these observations, we must look further if we are to uncover explanations of the relatively large differentials in pregnancy between young adults in Europe and those in the United States.

- *Sexual activity.* If young U.S. women began to have sexual intercourse at an earlier age or had intercourse more frequently than their European counterparts, it would undoubtedly account for at least part of their higher pregnancy rates. In the United States, the first evidence of a substantial rise in teenage fertility occurred in the immediate postwar years (1945–1949), a period that presumably witnessed a significant increase in premarital sexual activity.[9] Data of decent quality on sexual activity are obviously difficult to find. In a recent study of teenage fertility in industrialized countries,[10] the available data, sketchy as they are, indicate no differences in the age at initiation of sexual intercourse. Data on frequency of intercourse are not available. The evidence is thus far from adequate, but what little there is seems to

**Figure 1. Pregnancy rates* (shown as a percentage of the U.S. rate) among women aged 15–44 in six Western nations, by age-group, 1985**



*The sum of abortions and live births per 1,000 women.

Sources: **Abortions**—see reference 2; **Births**—relevant national government reports.

indicate that national differences in sexual activity cannot serve as an explanation for the differences in pregnancy rates.

- *Contraceptive use.* If all young women at risk of unintended conception were to practice contraception perfectly, the only differences that would occur among them would be a result of a higher rate of intentional pregnancy. However, this does not happen. The evidence in fact indicates that American women under age 25 are less likely to use any form of birth control than are European women of that age-group.[11] According to various national surveys of women of reproductive age conducted in the late 1970s and early 1980s, young American women were both less likely to use any method and less likely to use an effective method. In particular, the proportion of women using the pill—the main choice of younger women—appears to be lower in the United States than in other countries. These differences in use could well account for the higher pregnancy rates in the United States. Regrettably, we do not have data that would enable us to determine whether Americans and Europeans use the same methods with equal effectiveness.

## Some Speculations

The evidence, partial and inadequate as it may be, indicates that young U.S. women have higher pregnancy rates than do women in other similar countries, and that this differential cannot be explained by differences in nuptiality, sexual activity or pregnancy intention. Furthermore, Americans use contraceptives less regularly, and when they use them, they generally use less-effective methods. However, why should young Americans be so distinctive? What differentiates American society and culture from those of other countries as similar to the United States as Canada and Britain, for example? Several hypotheses emerge when the question is posed this way.

- *Availability of contraceptives.* At the most immediate level, Americans simply may not have the same access to contraceptives as young people in other countries.[12] This argument takes several forms. One is that certain specific contraceptive methods available in other countries (such as the "morning after" pill, injectables, implants and various IUDs) are not available in the United States. In addition, in the United States, most women who do not wish to visit a clinic must go to a specialist to obtain contraceptives, whereas in Europe women can obtain contraceptive services from family practitioners, a much more accessible source. There are also institutional barriers that differentiate us from Europe, such as prohibitions on the advertising of contraceptives on the major American television networks. Finally, there are differences in the cost of family planning services that distinguish national and private health care systems.
- *Social and economic factors.* There is little doubt that availability factors play a role, but differences between American and other Western societies suggest more basic explanations. One of the more obvious national differences (particularly between the United States and the Scandinavian nations) is the existence here of what is now termed the underclass—the members of which are concentrated in urban areas and in one-parent households and are disproportionately black and Hispanic. About one of every four white adolescents aged 12–17 and nearly three in five black adolescents live with only one parent or with no parent at all.[13] Unlike most of the other developed countries, the United States has enormous ethnic diversity and an unequal income distribution. In many ways, despite the homogenizing influence of the mass media, such heterogeneity reduces social cohesiveness, and, at least in the ghettos, produces alienation from middle-class values.

What are the implications for pregnancy rates? Among other things, alienation means a rejection of such conventional paths to adult roles as education, thrift and hard work, the kinds of stereotypical values espoused by stable families who at least hold hopes for the next generation. In a way, the practice of contraception reflects an implicit affirmation of alternative life opportunities. The combination of poverty and single-parent households acts to discourage the deferral of gratification and the value of planning and to encourage various forms of risk-taking. One form of such risk-taking may be unprotected intercourse, which can lead to unintentional pregnancy and out-of-wedlock childbearing.

Risk-taking is not limited to poor, minority youths living in single-parent households, however. One crude indicator of risk-taking behavior in society *generally* is the motor vehicle accident rate. For what it is worth (statistics on this subject and international comparisons being fraught with methodological pitfalls), the motor vehicle accident rate among persons 15–24 years of age in the United States is about twice as high as that in West Germany, three times as high as that in the United Kingdom and France, and 5–8 times as high as that in Sweden and the Netherlands.*[14] There seem to be few Western countries where accident rates approach those of the United States, although Canada and Britain are closer to the United States in this respect than are the Scandinavian countries.

The United States also ranks highest in rates of other accidents, at least those that are fatal and thus reported in the cause-of-death statistics.[15] Information for the years 1982–1984 indicates that the death rates for 15–24-year-olds from nonvehicular accidents in seven other countries ranged from 25 percent (Netherlands) to 80 percent (Canada) of the U.S. rate.

Risk-taking seems to be associated with various other forms of deviant behavior, including drug and alcohol abuse, school problems and crime. The homicide rate among 15–24-year-olds in the United States is 6–20 times higher than comparable rates in the other countries studied.[16] In addition, the school year in the United States is shorter than in typical European school systems, the discipline is weaker, and less, evidently, is learned.† Despite the comparatively high proportion of high school graduates who attend college, the American educational scene features a high incidence of school drop-out and low academic achievement, both of which are risk factors in teenage pregnancy.[17] Some research indicates that regardless of a young woman's race or socioeconomic background, a positive attitude toward school is associated with lower rates of teenage pregnancy.[18] This is an extension of the alienation thesis—that poverty has created an underclass of people who do not attach the same value to education as the middle class does. The research shows that the pregnancy rate among black women 15–24 is nearly twice that among comparable whites, and about 40 percent of black women bear their first child as teenagers—four-fifths of those are born out of wedlock. Nonetheless, after these high rates among blacks are excluded, U.S. pregnancy rates remain much higher than those of European young adults.

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*The U.S. rate continues to be higher than those of Sweden and West Germany (the two other countries for which such statistics are available), even when the data have been adjusted for the number of licensed drivers in the youthful ages or when the calculation used is the number of accidents among 18–24-year-olds divided by the total number of cars. In Canada, the motor vehicle death rate is one-third that of the United States.

†A recent Gallup survey showed that 20 percent of Americans 18–24 were unable to locate the United States on a map of the world, and 25 percent of all adults could not identify the Pacific Ocean. Young American adults ranked last in their knowledge of elementary geography, trailing those in Britain, Canada, France, Italy, Japan, Mexico, Sweden and West Germany. (See *U.S. News and World Report*, Aug. 8, 1988, p. 11.)

Rates of single parenthood vary enormously by race and by social class, from one per 1,000 among white women of high academic ability and high socioeconomic status who live in two-parent families, to one in four among young black women with low academic ability and low socioeconomic status who live in female-headed households. Nonetheless, even without the high pregnancy rate among blacks, pregnancy rates among young U.S. adults are much higher than those among young adults in Europe.[19]

Many whites as well as blacks and Hispanics grow up under poverty conditions, and clearly more than alienation from middle-class values is involved. The conditions of poverty and the ghettos of the large cities do not tell the whole story. There are important differences between countries that *can* be characterized, however imprecisely. For example, consider the differences between the United States and contemporary Japan, where national competition on examinations dominates childhood and young adulthood, family structure is strong, an ethos of cooperation is common, there is little premarital sexual exposure, marriage is delayed and adolescent childbearing is rare. The demographic evidence indicates that Japanese women marry between ages 25 and 26, have two children in rapid succession and then stop childbearing.[20] The pregnancy rate among Japanese teenagers is only one-tenth that among U.S. teenagers.[21] Another interesting contrast is with Sweden, where a homogeneous middle class lives in a welfare society. In Sweden, the birthrate among women under 18 is nearing zero, informal cohabitation is common and marriage occurs late, frequently after childbearing begins.[22]

Part of the increase in teenage pregnancy in the United States that occurred after World War II may have been related indirectly to declining parental authority. In an essay written a dozen years ago, Kingsley Davis argued that the authority of parents and kin and of local community sanctions has been undermined by competition from agencies outside the family, such as the schools, welfare agencies and religious organizations.[23] The erosion of parental discipline broke down both barriers to premarital sexual activity and the importance of ideas of responsibility and marriage. Nonmarital birthrates can serve as an index: In 1950, 14 percent of all births to women under 20 were out of wedlock, but by 1986, this proportion had increased to 61 percent. Among nonwhites, for whom such social controls are even weaker, the proportion of teenage births occurring outside of marriage increased from 37 percent in 1950 to 87 percent in 1986.[24] Since 1970, the birthrate among unmarried white women aged 15–19 has doubled; among 20–24-year-old unmarried white women, it has increased by nearly 50 percent just since 1980. Although the nonmarital birthrate among nonwhites is 3–4 times higher than the rate among whites, it has changed little since 1970.[25]

Some of the increase in pregnancy rates among younger women generally may be indirectly related to the sharp increase in women's labor force participation that began during World War II and continued to grow in subsequent decades. This radical change in the status of women relates in (at least) two ways to an increase in pregnancy rates among younger women. The absence of the mother from the household during a major part of the day is no doubt part of the erosion of parental authority and plausibly removes teenagers, especially those in their early teens, from parental supervision. This change has been documented in research estimating that the proportion of white teenagers aged 12–17 who lived in families with at least one parent present during the day (i.e., not in the labor force at least part-time) declined from 80 percent in 1940 to 40 percent in 1980. Parental supervision of black teenagers has consistently been less than that among whites, but it also declined over the 40-year period—from 53 percent to 34 percent.[26]

Women's labor-force participation can also increase out-of-wedlock childbearing by contributing to the postponement of marriage, which prolongs exposure to the risk of premarital pregnancy. As women become increasingly independent financially, the economic importance of marriage diminishes, and all Western countries have experienced significant reductions in the proportion of young women married. In addition, with the changes in norms governing premarital chastity and the emergence of the birth control pill, premarital sexual activity and pregnancy could be expected to have increased. However, such changes have occurred throughout Western society, not just in the United States. Thus, in themselves, they do not explain the differences between the United States and other Western nations.

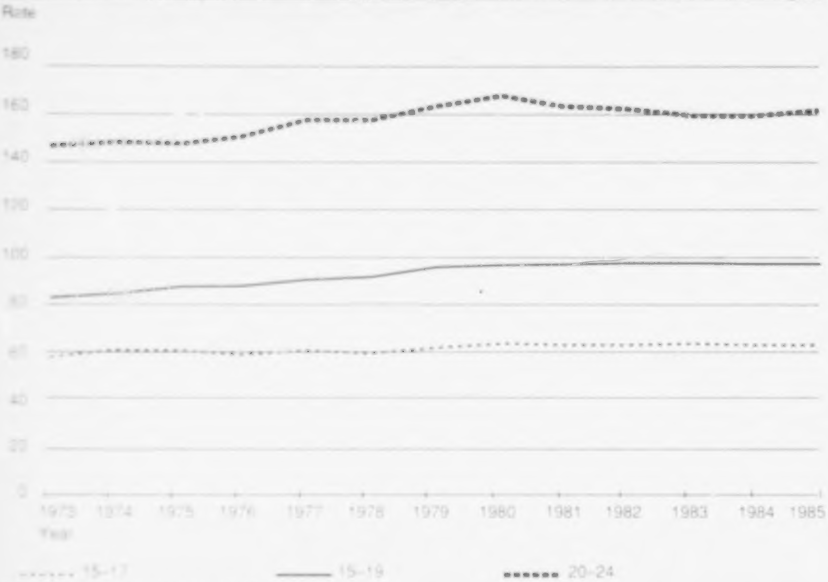
Rates of unintentional pregnancy may also be affected by the strong element of religiousness in America, another characteristic that seems to distinguish this country from European nations. Although the United States is a secular society with a strong emphasis on material consumption, a part of the culture promotes fundamentalist religious beliefs and more orthodox religious attitudes that are often basically antisexual. Religion is a form of social control that enhances social integration and cohesiveness, but it can also interfere with rational response. Thus, it might be expected that the prohibition or at least discouragement of premarital sexual behavior would lead to lower pregnancy rates, but the effect of similar attitudes toward contraception can be the opposite. It is noteworthy that only in the United States is there a government-sponsored program to discourage teenagers from having sex.

- *Attitudes toward sex.* Even a casual observer of the American mass media, both video and print, cannot fail to be struck by the extent of sexual content in standard programming, magazines and books, as well as in advertising. Americans are suffused with messages, ranging from clothing ads to television serials, that legitimize open sexuality. Advertisements for automobiles, cigarettes, beer, travel, health products, cosmetics and even traveller's checks capitalize routinely on sexual messages. Adult soap operas feature seminudity and sexual liaisons. Pornographic magazines and video cassettes are widely available. The atmosphere is saturated with sex, yet public norms still emphasize the old-fashioned virtues of marriage and family.

The irony derives not so much from the seeming inconsistency between ideals and practice as from the refusal of the media to communicate responsible attitudes toward sex and the possibility of unintentional pregnancy. Birth control ads remain taboo on the major national networks, although the specter of AIDS and the potential health benefits of condom use threaten to alter this prohibition, at least in regard to the condom. The concern of the networks' management relates to what it perceives as public and commercial sensitivities about offensive birth control ads. It is an interesting phenomenon that does not exist in most other comparable countries, and it highlights the essentially ambivalent attitudes Americans have toward sex.

Attitudes about sex education are another example of American puritanical resistance to recognizing the sexual realities of modern life. In some instances, the fact of teenage pregnancy and sexually

Figure 2. Pregnancy rates* among U.S. women aged 15–24, 1973–1985



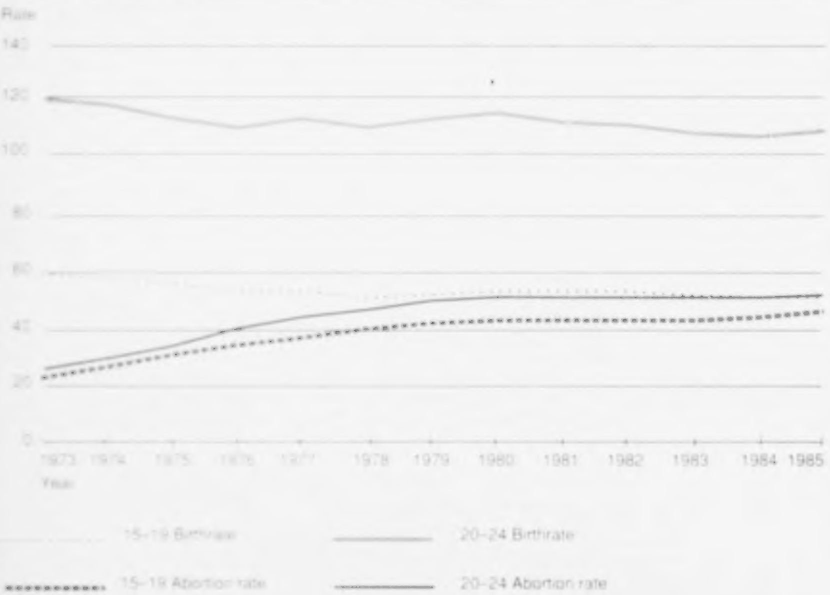
*The sum of abortions and live births per 1,000 women.

Sources: **Abortions**—see reference 2. **Births**—National Center for Health Statistics, "Advance Report of Final Natality Statistics, 1986," *Monthly Vital Statistics Report*, Vol. 37, No. 3, Supplement, July 12, 1988, Table 4.

transmitted disease is even blamed on sex education—the familiar argument that knowledge stimulates appetite. Although no Western country has as long a tradition of sex education in the schools as Sweden, the United States is probably the least advanced.

In general, the ambivalence toward sexuality that is evident in American life makes it more difficult for people to respond rationally to the problems caused by the increase in the proportions of young women who are exposed to the risk of unintended pregnancy.

Figure 3. Birthrates and abortion rates* among U.S. women aged 15–24, 1973–1985



*Per 1,000 women. Sources: See sources for Figure 2.

## Future Trends

In what direction will pregnancy rates among young American women go in the future? Trend data for the past decade or so (1973–1985) indicate that pregnancy rates have remained stable over the last five years, among both 15–19-year-olds and 20–24-year-olds (Figure 2). Nor is any recent trend evident among 15–17-year-olds, for whom pregnancy is a more serious problem than for older teenagers. The separate components of the pregnancy rate—the birthrate and the abortion rate—also have shown little change in direction in recent years (Figure 3). In earlier years (from 1970 to about 1980), the pregnancy rate increased steadily, presumably as a result of increasing sexual exposure among young women. Over the same period, the birthrate in this age-group declined, as a result of the increasing abortion rate. These counteracting trends seem to have ceased, and now we see stability in both rates.

Although there is no hard evidence to suggest a downward movement of pregnancy rates, it seems reasonable to conjecture that in the future we will witness such a decline. One basis for this presumption is the very fact of the now credible cessation of the earlier increase. In addition, there is increasing public concern about teenage pregnancy, and the greater attention that has been focused on the use of condoms for health reasons should also help reduce the pregnancy rate, so long as condoms are not simply substituted for other, more effective methods. Although it seems unlikely that any decline will be so steep as to erase the differences between the United States and the other industrialized countries examined here (at least without more basic social changes), some decline can probably be expected.

## A Perspective

We began by asking the central question: Why do young women in the United States experience rates of pregnancy so much higher than those seen in similar Western countries? Several possible explanations have been advanced, both at the proximate and at the more basic sociological levels. It seems appropriate to conclude this essay by asking "so what?" What difference does it make that American young women become pregnant at earlier ages than their European contemporaries? After all, most of these pregnancies would have occurred anyway, albeit later in the young women's lives, and the biologically optimal ages for childbearing are 18–24.

There are, however, real costs. First, there are the well-known educational, social and economic consequences of early teenage pregnancy, childbearing and out-of-wedlock parenthood, both for the individuals involved and for society at large.[27] In addition, a large number of abortions could, in theory, be averted.[28] Finally, the wide resort to surgical sterilization at comparatively young ages, which stems from the unacceptability of alternative contraceptive methods, is related to the relatively high incidence of early childbearing. Ironically, the trend in sterilization acceptance in the United States has resulted in a lower level of unwanted pregnancy in the later reproductive years compared with other Western countries, while at the same time unplanned pregnancy rates at the younger ages are highest in the United States.

Despite wide national differences—in family structure, income distribution, religiousness, attitudes toward sex, ethnic composition and various social pathologies—both the United States and all other industrialized countries conform to a general norm of low fertility. It is the high pregnancy rate among young women that makes the United States different. Although the rate has stopped increasing, and probably will begin to decline, the social and economic differences from other countries are large enough that the pregnancy rate among young American women is likely to continue to be distinctively high for some time to come.

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# Teenage Pregnancy in the United States

*By James Trussell*

## Summary

One out of every 10 women aged 15–19 becomes pregnant each year in the United States. Of these pregnancies, five out of every six are unintended—92 percent of those conceived premaritally, and half of those conceived in marriage. The teenage pregnancy rate is high because only a minority (one in three) of sexually active young women always use contraceptives, and only one in two of these women rely on the most effective methods. The two most common reasons given by adolescents for not using contraceptives are believing that the risk of pregnancy is small, and failing to anticipate intercourse.

Experience in other developed countries clearly shows that the incidence of adolescent pregnancy can be reduced if effective contraceptives are made widely available. Although high quality sex education programs that include information about contraception, reproductive biology and responsible sexual behavior can enhance the effectiveness of contraceptive delivery systems, they are not a substitute for the actual provision of services and supplies. However, there is formidable political opposition to the provision of such services by a vocal minority who believe that the crux of the problem is premarital sexual activity, and that lowering the cost of such behavior by reducing the risk of pregnancy will both legitimize adolescent sex and increase its prevalence. Consequently, there is a political impasse that guarantees a continuing large number of adolescent pregnancies. Further, even if contraceptives and sex education were readily available to all adolescents, there would still be a pool of teenagers who would see little benefit in postponing parenthood. This pool would be composed overwhelmingly of the poor and of blacks and Hispanics. Increasing the demand for pregnancy prevention among young women and men in this hardcore, high-risk group will be extremely hard to achieve without a fundamental restructuring of society.

**"... Reducing teenage childbearing should be our first priority. If necessary, I would sacrifice the goals of reducing adolescent sexual activity and adolescent pregnancy to attain this one."**

## Defining the Problem

One out of every 10 women aged 15–19 in the United States becomes pregnant each year, a proportion that has changed little during the past 15 years. This year, there will be about 837,000 pregnancies among women aged 15–19, and another 23,000 among those aged 14 and younger.* The sheer magnitude of these statistics has generated widespread public concern, and has brought about a consensus favoring the implementation of public policies and programs that reduce the incidence of adolescent pregnancy.

Nevertheless, this consensus offers little guidance for formulating public policy, because the reasons for concern vary widely according to what people perceive to be the heart of the problem. Some would draw an important distinction between married and unmarried adolescents, because they believe that premarital sex is unwise or immoral. This year, approximately 650,000 pregnant teenagers (representing about 75 percent of those aged 15–19, and virtually all of those aged 14 and younger) will resolve their pregnancies outside of marriage. Others contend that priority should be given to reducing unintended pregnancies among all adolescents. Only 138,000 adolescent pregnancies, or about 16 percent of the total number among teenagers,[1] will be intended this year. Women under age 20 contribute 32 percent of all unintended pregnancies; three-quarters of adolescent unintended pregnancies occur to those who do not practice contraception.[2] Still other analysts

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*The absolute numbers of pregnancies in this section were obtained in the following manner: The size of the 1988 female population was obtained from the U.S. Bureau of the Census (see: "Fertility of American Women: June 1987," *Current Population Reports: Population Estimates and Projections*, Series P-20, No. 427, May 1988), and the numbers of births in 1985 by age, race and marital status are from the National Center for Health Statistics (see: NCHS, "Advance Report of Final Natality Statistics, 1985," *Monthly Vital Statistics Report*, Vol. 36, No. 4, 1987). Births were distributed by poverty status on the basis of proportions found in the March 1985 Current Population Survey; Susheela Singh provided the relevant cross-tabulations, which were based on the presence of infants less than one year of age instead of on births. Abortions were obtained from a 1987 survey conducted by The Alan Guttmacher Institute (see: S.K. Henshaw and J. Silverman, "The Characteristics and Prior Contraceptive Use of U.S. Abortion Patients," *Family Planning Perspectives*, **20:**158, 1988). These were adjusted to conform with 1985 totals by age (15–17 and 18–19) estimated by Stanley Henshaw. Estimates of abortions and births for 1988 were obtained by assuming that 1985 rates pertained to women in 1988. Pregnancies were obtained by adding births and abortions. As stated in the text, the resulting numbers are underestimates of pregnancies because spontaneous abortions are ignored and because data are tabulated by age at the resolution of pregnancy instead of age at conception.

are convinced that the main problem is adolescent childbearing, reasoning that giving birth at an early age not only seriously damages a young woman's life chances and limits her options, but also creates a suboptimal environment for the child. This year, there will be approximately 463,000 births to women under 20 years of age: About 9,000 of these births will be to women under the age of 15; about 161,000 to women aged 15–17; and approximately 293,000 to women aged 18–19. Finally, many people are particularly troubled by the large number of abortions obtained by adolescents; there will be about 397,000 this year.

While some people are concerned about pregnancy or abortion or childbearing among all adolescents, others believe that the problems are particularly acute for the poor and the very young, who suffer the consequences to the greatest extent. This year, there will be about 9,000 births and 14,000 abortions among women under the age of 15, and another 161,000 births and 162,000 abortions among those aged 15–17. About 77 percent (355,000) of all births among women under age 20 will occur to those with family incomes of less than 150 percent of the poverty level; slightly over half the total (236,000) will occur to women who are both poor and unmarried. Opinions vary considerably as to whether adolescent pregnancy is primarily a health issue, a moral issue or an economic issue.

I have identified three arguments that support public intervention to "solve" the adolescent pregnancy problem. Each argument suggests a different intervention strategy, which I will touch upon here and discuss in greater detail later. The arguments may be summarized as follows:

- Unmarried people, especially young ones, should not engage in sexual intercourse. There is far too much emphasis on sex in our society, especially in the media; and public institutions, particularly the schools, have abandoned the teaching of traditional values. The solution, therefore, is to embark on a vigorous campaign to promote these values, particularly chastity among the unmarried. Other strategies to reduce adolescent pregnancy—such as increasing the availability of contraceptive and abortion services—are unacceptable, because they have the undesirable if unintended effect of legitimizing (and perhaps even increasing) sexual activity.

The target group for such a strategy is very large. Some 8.1 million women aged 15–19 are not married; of these, 3.5 million have had intercourse, and 4.6 million are still virgins.[3]*

- Because such large proportions of adolescents—47 percent of women 15–19[4]—*are* sexually active, it seems only prudent to provide them with accurate information on reproductive biology and contraception starting at an early age. Such information is an essential component of family-life education, whose primary goal should be to promote rational and informed decision-making about sexuality. Nevertheless, information alone will not reduce pregnancy rates unless contraceptive services are also widely available.

A strategy of preventing pregnancy targets both adolescents who are already sexually active and those who are about to become so. In the current year, some 4.2 million women aged 15–19 have had intercourse at least once.

- While preventing pregnancies is a very important goal, it is clear that this objective will not be met in the short run. Even if high-quality sex education and contraceptive services were universally available, some adolescents would still become pregnant. Many teenagers do not plan their lives carefully, and all available contraceptive methods require such planning. Moreover, contraceptive failure rates even among more mature women are not low.[5] Therefore, abortion services and programs to ameliorate the adverse consequences of adolescent childbearing must be made available, particularly to the poor, who suffer the consequences to a greater extent and generate more public costs.

The target group for this approach would be limited to the 860,000 pregnant teenagers—both those who do not wish to carry their pregnancy to term and need abortion services (at least 46 percent or 400,000 women annually), and the remainder who want to complete their pregnancy and need ameliorative programs.

These three arguments are not mutually exclusive, and even people who generally agree with one of them may not concur with every point. Nevertheless, there are considerable differences among the solutions advocated by the proponents of the three viewpoints—that is, those who believe sex, pregnancy or childbearing (particularly among the poor) to be the main aspect of the problem. There is also a great deal of controversy over the use of abortion as a remedy for unplanned pregnancy.

In this article, I will examine the incidence of teenage pregnancy in the United States; contrast the U.S. experience with the experience of other developed countries; analyze the determinants of pregnancy and the consequences of adolescent childbearing; and explore the relative merits of possible intervention strategies.

The literature on adolescent sexual behavior, pregnancy and childbearing is vast. Fortunately, many of the research findings have been summarized in recent comprehensive publications of the National Academy of Sciences[6] and The Alan Guttmacher Institute (AGI).[7] To a considerable extent, our knowledge of adolescent sexual behavior and contraceptive practice in the United States is based on three national surveys carried out in 1971, 1976 and 1979 (the last is applicable to metropolitan areas only).[8] Additional information is available from the 1982 National Survey of Family Growth (NSFG), conducted by the National Center for Health Statistics (NCHS),[9] and from the National Longitudinal Survey of Work Experience of Youth (NLS).[10] More data will soon become available from the fourth round of the NSFG, conducted in 1988. Almost all the data pertain to women; there has been very little research on the sexual behavior of teenage men or the consequences of teenage fatherhood. Data on births are published by the NCHS, and data on abortions are collected by both the Centers for Disease Control (CDC) and the AGI.

## Trends and Levels

Pregnancies can end in births, induced abortions or spontaneous abortions. However, since U.S. data are available for only the first two outcomes, estimates of pregnancies are often too low because they are presented as the simple sum of births and induced abortions. Although we will follow that convention throughout this article, we are aware that the estimates of total recognized pregnancies are too low by 10–15 percent, because of the omission of spontaneous abortions.†

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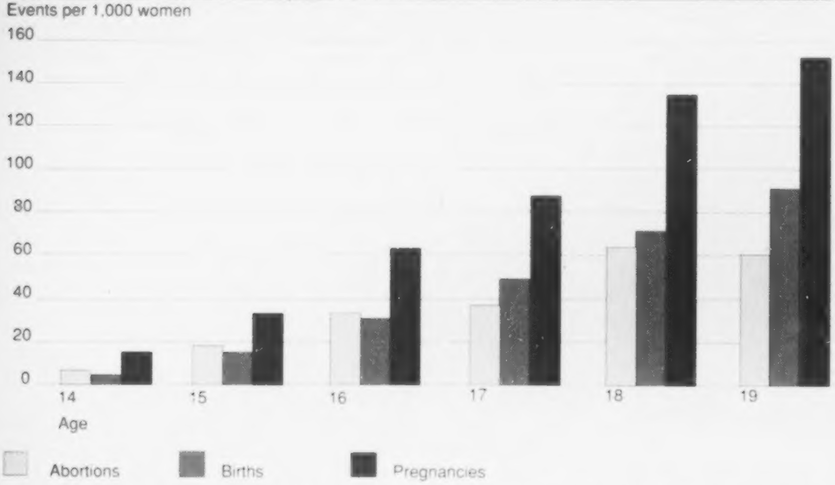
*These numbers are based on the assumption that 43 percent of never-married women, and all formerly married women, have had intercourse (see: W. Pratt et al., "Understanding U.S. Fertility: Findings from the National Survey of Family Growth, Cycle III," *Population Bulletin*, **39**:1, 1984.)

†Total *recognized* pregnancies are, in turn, underestimates of total pregnancies, because many pregnancies end in spontaneous abortion before they are recognized. A recent study indicates that the incidence of miscarriage (31 percent of pregnancies) is higher than was previously thought, primarily because estimates of very early pregnancy loss are very difficult to obtain (see: A. Wilcox et al., "Incidence of Early Loss of Pregnancy," *The New England Journal of Medicine*, **319**:189, 1988). About half the miscarriages would be recognized by the woman, assuming that 18 percent of recognized pregnancies end in spontaneous abortion (see: G. Erhardt, "Pregnancy Losses in New York City," *American Journal of Public Health*, **53**:1337, 1963). Thus, the number of total pregnancies would be about 18 percent greater than the number of recognized ones.

**Figure 1. Number of births, abortions and pregnancies per 1,000 women aged 14–19, by age, United States, 1981**



Note: Pregnancies are calculated as the simple sum of abortions and births, and are therefore underestimated.
Source: See reference 1, Table 2.2.

A further complication arises because the data show reproductive outcomes by age at resolution. However, a woman who has an induced abortion or a birth at age 15 may have become pregnant when she was 14. Because birth and abortion rates rise with age, the conventional estimate of the pregnancy rate at any adolescent age will be too low, particularly at the youngest ages. Trial calculations that remove both sources of bias suggest that *recognized* pregnancy rates in the United States may be 50 percent higher at age 14, and 25 percent higher at age 19, than the rates reported here; *total* pregnancy rates would be about 68 percent and 43 percent higher at these two ages, respectively.

Birthrates among women aged 15–19 declined steadily from 1970 to 1978, rose slightly thereafter, began to decline again in 1983, and rose very slightly in 1985 before falling to a record low in 1986.[11] In contrast, abortion rates rose steadily from 1973 (the year abortion was legalized nationwide) to 1981, and began to decline in 1982.[12] The increase in abortion rates initially outweighed the decrease in birthrates, however, so that pregnancy rates rose slowly but steadily from 1973 to 1981; since 1981 they have fallen slightly.

As Figure 1 shows, just over one percent of 14-year-old girls became pregnant in 1981. This proportion rose steadily with age, to reach 15 percent of women aged 19. The proportion of pregnancies ending in a birth also rose with age, from 39 percent among those aged 14 to 60 percent among those aged 19. In the same year, four out of every five pregnancies among women under 20 years of age were conceived out of wedlock. Of these, 54 percent were terminated by abortion, 34 percent resulted in an out-of-wedlock birth and the remaining 12 percent resulted in a marital birth because the woman married before delivery. Of the one in five pregnancies conceived within marriage, the vast majority (87 percent) were carried to term.[13] Overall, in 1980, only eight percent of women aged 15–19 were married; the proportion married ranged from one percent of 15-year-olds to 20 percent of those aged 19.[14] Although married teenagers are three times more likely to conceive than are unmarried teenagers (one in four vs. one in 12, respectively), there are relatively so few married adolescents that they account for only about one-fifth of all teenage pregnancies each year. Nevertheless, because pregnancies conceived in marriage are less likely to be aborted, married women account for a much higher fraction (about one-third) of the adolescent pregnancies that lead to births.

Teenage pregnancy rates among blacks are nearly twice as high as those among whites (163 births per 1,000 black 15–19-year-olds vs. 83 per 1,000 whites in 1981). Furthermore, white women are more likely than black women to abort a pregnancy, so that the racial differential in birthrates is even greater than the differential in pregnancy rates: In 1981, there were 97 births per 1,000 black women aged 15–19 vs. 45 per 1,000 white women.[15]

There are no comparable data available for Hispanics; although information on Hispanic origin is collected on birth certificates in almost half of the states, it is not gathered in the abortion surveillance systems. The teenage birthrate for Hispanics in the 22 states reporting data in 1980 was about two times higher than that for white non-Hispanics, and about 80 percent as high as that for black non-Hispanics.[16] However, racial and ethnic differentials in fertility are probably exaggerated by differences in standards of living. Although no published data exist to test this hypothesis, greater proportions of blacks and Hispanics than of whites are poor, and fertility rates among the poor exceed those among the nonpoor.*

## The United States and Other Countries

How does the U.S. experience compare with that of other countries? From a glance at Figure 2, which shows adolescent pregnancy rates in 1980 for six countries in a cross-national comparative study,[17] it is immediately obvious that these rates were far higher in the United States than in any of the other countries. Moreover, U.S. abortion rates and birthrates were also higher at every age (not shown). There is nothing exceptional about the year 1980; throughout the entire period 1970–1981, U.S. birthrates (especially among women aged 15–17, but also among those aged 18–19) were consistently higher than those in the other countries. Likewise, abortion rates were higher in the United States in every year for which data were available. Moreover, a recent update of teenage abortion and pregnancy rates in these countries reveals that these wide differentials still persist.[18] Further, comparing U.S. pregnancy rates with those in only five other developed countries does not give a distorted picture: Pregnancy rates among women under age 20 are considerably higher in the United States than in any other developed country for which data are available, with the exception of Hungary, where the rate is only about five percent lower, and the rate among women under age 18 is only three-quarters as high as in the United States. Moreover, birth-

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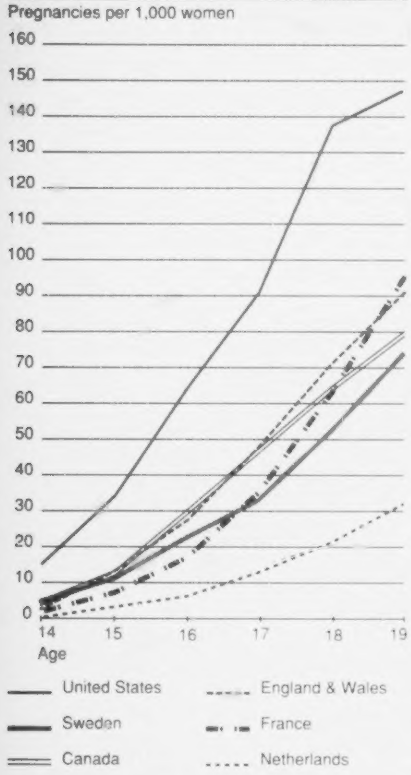
*Census data show that greater proportions of black and Hispanic women are poor, and that general fertility rates are higher among the poor (see: U.S. Bureau of the Census, "Fertility of American Women: June 1987," *Current Population Reports: Population Estimates and Projections*, Series P-20, No. 427, May 1988, Table 4). Census data also show that the white/black/Hispanic differentials in the general fertility rate would be reduced from 1.00:1.21:1.40, respectively, to 1.00:1.09:1.26 if blacks and Hispanics had the same proportion of family incomes under $10,000 as do whites.

**Figure 2. Number of pregnancies per 1,000 women under age 20, by age, six countries, 1980**



**Note:** Pregnancies are calculated as the simple sum of abortions and births, and are therefore underestimated.
**Source:** See reference 1, Tables 2.2 and 2.4–2.8.

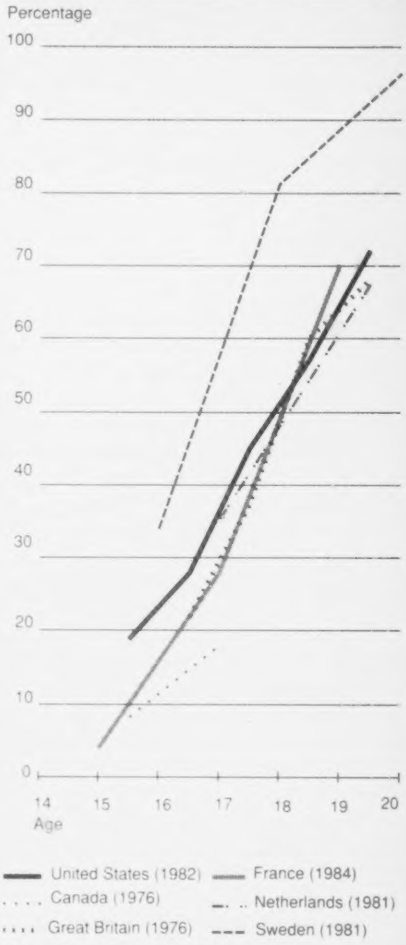
rates among women under age 20 are higher here than in 29 other developed countries; the only populations with higher birthrates are Bulgaria, Chile, Cuba, Czechoslovakia, Greece, Hungary, Iceland, Puerto Rico and Romania. Among women aged 15–17, only Bulgaria, Cuba, Hungary and Puerto Rico have higher birthrates than does the United States. Fertility rates among adolescent American black women are higher than those in any of the other 39 populations studied (including U.S. whites).[19]

Why is the discrepancy in pregnancy rates between the United States and the other countries shown in Figure 2 so large? It is not due to cross-national variations in proportions married, since the same qualitative conclusions would be obtained if data were shown only for the unmarried. Part of the difference is attributable to the very high pregnancy rates among U.S. blacks, but pregnancy rates among U.S. whites are still much higher than those among women in the other countries. The available evidence, shown in Figure 3, indicates that the proportions of teenagers ever having sexual intercourse are similar in all countries except Sweden, which has much higher proportions of sexually experienced adolescents at every age, and Canada, where the proportions are lower (but the data are less reliable). Therefore, the higher adolescent pregnancy rates found in the United States are not caused by more prevalent sexual experience.* The contrast between Sweden and the United States is quite extreme: Although greater proportions of American teenagers are virgins at every age, Sweden has much lower abortion, birth and pregnancy rates at every age.

The main reason for higher pregnancy rates in the United States is that American adolescents are less likely to use contraceptives regularly, or use them less effectively, than those from the other five countries. Further, among contraceptive users, smaller proportions of U.S. teenagers rely on the most effective methods, particularly the pill.

Both Canada and the United States lag substantially behind the other countries in the delivery of contraceptive information and services to adolescents. Contraceptive supplies and services appear to be most widely available, free of charge or at low cost, to adolescents in England and Wales, the Netherlands and Sweden. In France, there has been a steady improvement in the quality of contraceptive services for adolescents. In Sweden, where sex education in the schools is compulsory, it is taught at all grade levels and includes information on contraception. Additionally, there is a close link between the schools and adolescent birth control clinics. In the Netherlands, where teenage pregnancy rates are lowest, sex education in the schools is generally limited to the teaching of reproductive biology. However, there is a heavy emphasis on sex education in the mass media as well as public funding of educational efforts aimed at adolescents by private family planning associations.[20]

**Figure 3. Percentage of women 14–20 who ever had intercourse, by age, six countries**



Source: See reference 1, Table 9.4.

### Determinants

One out of every 12 unmarried American teenagers becomes pregnant each year; half of them carry the pregnancy to term. What factors determine this pattern of behavior?

- *Attitudes.* A common opinion is that many adolescents consider having a child an attractive alternative to their current situation. They may, for example, be bored in school or have serious conflicts with their parents. While some adolescents undoubtedly believe that having a child is a ticket to independence and act accordingly, there is overwhelming evidence that the vast majority of unmarried adolescents who become pregnant do not intend to do so.[21] Nevertheless, it is important to remember that the degree of intention—the strength of the desire to become pregnant before marriage or to avoid premarital pregnancy—varies considerably and cannot be captured adequately by a sharp dichotomy between intended and unintended. The desire to avoid pregnancy is governed by a young woman's perception of the benefits of deferring parenthood. This perception is strongly influenced both by her present circumstances and by her belief in her future. For many disadvan-

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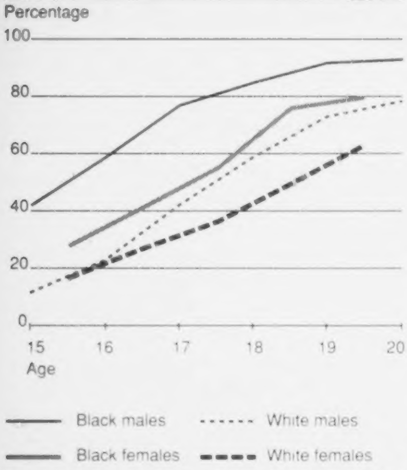
*Data on frequency of intercourse among adolescents exist only for the United States. It is, however, highly unlikely that coital frequency could explain national differences in pregnancy rates.

**Figure 4. Percentage of never-married adolescent males and females who have experienced sexual intercourse, by race, United States**



Sources. **Males**—K. Moore, D. Wenk, S. Hofferth and C. D. Hayes (see reference 27, Table 1.4); see reference 14. **Females**—See reference 3, Table 2.

taged youths, the benefits of postponing parenthood must seem elusive indeed.

Research on black adolescent mothers provides revealing insights about their sexuality and childbearing;[22] although the corresponding information for whites is less rich, I have little doubt that several of these findings* would apply generally. First, there is a discrepancy between the values adolescents express and their actual behavior. Their "ideal" sexual code places emphasis on waiting until marriage to have sex and on the practical dangers of becoming pregnant. These values, however, must be "stretched" because of the pressures of everyday life. The conflict between ideal and actual behavior leads to several real difficulties, which may be summarized as follows. Adolescents believe that to plan to have sex is wrong; sexual intimacy is excusable only if one is swept away in the heat of passion, without prior thought. (Effective contraceptive use requires planning, however.) Adolescents who do become pregnant tend to deny their situation. Consequently, those who resort to abortion tend to do so later in gestation than do more mature women. Many parents, particularly mothers, encourage this charade. While they will warn their daughters not to become pregnant, they offer little guidance for accomplishing this feat. Parents practice denial by pretending that their daughters do not have sex and then expressing great shock when they become pregnant. The teenagers' own initial reactions to a pregnancy, even among those who eventually carry it to term, are usually quite negative. Adolescents feel that having a baby will damage their life chances and that they are not mature enough to care for and raise a child. Nevertheless, many feel helpless to alter their fate. Finally, as the pregnancy progresses and is accepted (if not welcomed) by parents and friends, the reactions of the expectant mothers become more positive. Indeed, their expectations about the future are likely to grow unrealistically positive. They underestimate the difficulties of continuing their education and of maintaining a relationship with the father; they overestimate their future economic status; and they underestimate the demands a child will make on their time.

- *Sexual behavior.* Undeniably, the proximate cause of pregnancy is sexual relations. According to the 1982 NSFG, 43 percent of never-married women aged 15–19 have had sexual intercourse; the proportion rises sharply with age, from 18 percent of women aged 15, to 66 percent of those aged 19. By the time they reach their 18th birthday, over half of never-married American women have had intercourse. Figure 4 shows the proportions of never-married men and women who have had intercourse by race. The proportions who engage in sexual relations with some degree of regularity are lower, but are nevertheless substantial: Among never-married women in the NSFG, 35 percent had had intercourse in the three months preceding the interview—25 percent of those aged 15–17 and 49 percent of those aged 18–19.[23]

The 1982 data suggest that the rapid increase documented during the 1970s in the proportion of females aged 15–19 who had experienced premarital sexual intercourse (30 percent in 1971 to 41 percent in 1976)[24] has slowed somewhat or even come to a halt. Examination of retrospective reports of age at first intercourse by women in the 1982 NSFG shows that the proportion of women aged 15–19 (standardized on the 1971 age distribution) who experienced premarital sexual intercourse rose from 32 percent in 1971 to 39 percent in 1976 to 41 percent in 1979, and remained almost the same at 42 percent in 1982. These statistics classified by race seem to show that the prevalence of premaritally sexually experienced teenagers has stabilized among whites and has declined among blacks. However, more refined analysis of the age at onset of sexual intercourse by cohort leads to the conclusion that any recent declines in the probabilities of losing one's virginity at ages 15–19 are compensated among blacks and more than offset among whites by increases in probabilities of initiating intercourse before age 15.[25] This conclusion is reinforced by a survey conducted by Market Facts for the Ortho Pharmaceutical Corporation in 1987. This survey found that 45 percent of women aged 15–17 had had intercourse, a figure far greater than the 32 percent reported in the 1982 NSFG.[26] However, comparison of the 1982 NSFG with the 1987 Ortho survey may be misleading, because the surveys do differ. The 1988 NSFG will pinpoint more precisely the direction and magnitude of the changes since 1982.

The only recent source of national data on sexual activity among adolescent males is the 1983 round of the NLS.† These data, shown by race in Figure 4, reveal that by their 15th birthday, 17 percent of boys have become premaritally sexually active. The proportion increases at every age: By their 16th, 17th, 18th and 19th birthdays, 29 percent, 48 percent, 64 percent and 78 percent of men, respectively, have had premarital intercourse.[27]

- *Contraceptive use.* Only 48 percent of teenage women surveyed in 1982 reported contraceptive use at first intercourse. Of these women, 47 percent used the condom, 27 percent relied on withdrawal, only 17 percent used the pill and nine percent relied on other methods.[28] Among women exposed to the risk of unintended pregnancy, 29 percent used no method, while 45 percent and 15 percent relied on the pill and the condom, respectively.[29] Among premaritally sexually active metropolitan women in the 1979 survey, 27 percent, 39 percent and 34 percent reported that they never, sometimes and always used a contraceptive, respectively.[30]

Why do so many adolescent women fail to use contraceptives? In the 1976 survey, 58 percent of the premaritally sexually active women who did not use a method at latest intercourse—even though they did not want to become pregnant—thought they could not conceive. Of the remaining women, one out of five stated that they had not expected to have intercourse. Not anticipating intercourse is an even more important factor in adolescents' failure to use contraceptives when they begin sexual activity; for example, among those who did not use contraceptives even though they did not want to become pregnant the

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*The entire paragraph is based on F.F. Furstenberg, Jr., *Unplanned Parenthood*, Free Press, London, 1976.

†In 1979, Kantner and Zelnik surveyed men aged 17–25 living in metropolitan areas, but no one has ever analyzed the data adequately.

only time they had intercourse, 87 percent did not expect to have sex.[31]

Half of all first pregnancies among adolescents occur within six months of first intercourse, and 20 percent occur in the first month alone. Clearly, those who do not practice contraception at the time of first intercourse face a high risk of unintended pregnancy. Who among these will become pregnant is largely a matter of chance. Those lucky enough to avoid conception until they begin using contraceptives substantially reduce their risk thereafter. Among teenagers who never practice contraception, 39 percent become pregnant within six months of their initial sexual encounter, and 66 percent do so within two years. However, among those who say they always use a method, the proportions who become pregnant within six months and two years of first intercourse are seven percent and 11 percent, respectively.[32]

Focus-group sessions have revealed that adolescents have an intense desire to keep their own sexual activity private and are embarrassed to discuss sexual matters with others, including their partners, friends, parents, counselors and physicians. Those who have never attended clinics picture these facilities as dingy places for the poor where patients are treated impersonally and are viewed as being morally irresponsible.[33] These sentiments help to explain the long delay—11.5 months on average—between initiating sexual relations and attending a clinic.[34] Adolescents are also embarrassed to go to family physicians, who might reveal their secrets to parents, offer unwanted moral advice or simply not help. These fears are not groundless: Twenty-two percent of general or family practitioners (but only two percent of obstetrician-gynecologists) refuse to serve minors, and 19 percent of GPs/FPs (18 percent of ob-gyns) provide contraceptive services only with parental consent.[35]

## Sex Education

Substantial proportions of teenage women surveyed in 1982 reported that they had discussed such topics as menstruation, sexual intercourse, venereal disease and contraception with their parents, and even higher proportions stated that they had received formal instruction about these topics in school.[36] For example, of 15-year-olds, 66 percent had discussed intercourse with their parents and 52 percent had talked about contraception. However, 81 percent of girls in this age-group had discussed intercourse in school, and 67 percent had received class instruction on contraception. At age 18 (when more than half of all never-married women are no longer virgins), 67 percent had discussed intercourse and 52 percent had talked about contraception with their parents, while 81 percent and 74 percent had discussed intercourse and contraception, respectively, in school.

While these figures are interesting, they reveal little about the depth of coverage of the topics. The efficacy of sex education courses is challenged by the fact that only 34 percent of those who had received instruction on pregnancy and contraception in school could correctly identify the time during the menstrual cycle when conception is most likely. A similarly gloomy conclusion is reached when one examines behavior: Among sexually active teenagers at risk of unintended pregnancy, only 62 percent of those who had received instruction about both pregnancy and contraception were currently using a contraceptive method, compared with 58 percent of those who had received no instruction.[37] A 1984 survey of urban school districts revealed that whereas 75 percent of districts provided some sex education in junior high school, fewer than 10 percent of districts spent at least one class period before the ninth grade discussing contraceptives and where to get them. Further, only about 20 percent of districts offered information about contraceptives and where to get them before high school graduation.[38]

Opposition to teaching about contraception is based on the belief that doing so promotes promiscuity. The data, however, do not support this belief. One study, based on the 1982 NSFG, found that exposure to contraceptive education had no consistent effect on the probability that a virgin would subsequently initiate intercourse.[39] A second study, based on data from the 1984 NLS, found that adolescent women who had taken a sex education course were somewhat more likely than those who had not to initiate intercourse at ages 15 and 16, although they were no more likely to do so at ages 17 and 18.[40] However, the effect of a sex education course was small, raising the likelihood of first intercourse at ages 15–16 by only 2–4 percentage points; other factors, mainly church attendance, parental education and race, proved to be much more important determinants. The practical import of the study's finding is further reduced by the fact that among those women who began sexual relations by age 18, no more than half had had a sex education course, and no more than two-fifths had had instruction about contraception.[41] A third study evaluated the effects of a school-based pregnancy prevention program on predominantly poor, inner-city black adolescents in Baltimore.[42] The program combined sex education, counseling and contraceptive services; it emphasized the development of personal responsibility, goal-setting and communication with parents. The results were encouraging: Not only were pregnancy rates reduced substantially when the two schools with the program were compared with two control schools, but students who were exposed to the program for three years were more likely to postpone the onset of sexual activity than were those who were not in the program.*

## Consequences of Early Childbearing

There is considerable literature on the medical, social and economic consequences of adolescent childbearing for mothers and children; much of it has been summarized in an excellent review article.[43] Unfortunately, many of the studies suffer from analytical flaws and poor experimental design, thereby rendering the conclusions suspect. Many studies report results obtained by analyzing all adolescents as one group, despite the fact that evidence suggests that the experiences of younger and older adolescents may differ widely. In addition, many studies are based on small, selective samples, so their results are not easily generalizable.

Perhaps the greatest problem is that we cannot be sure whether the adverse effects of early childbearing are causally related to the mother's age at birth. Many studies fail to control for both maternal age and socioeconomic status; as a result, the adverse consequences of early childbearing per se are frequently overstated. Another serious analytical problem in studying the consequences of adolescent childbearing arises because adolescents are able to select or affect their treatments—whether or not they become pregnant or whether or not they will bear a child. The investigator can never study the consequences of adolescent childbearing by conducting a rigorous randomized trial. At best, adolescent mothers can be compared with controls that are as similar to them as possible with respect to measurable background variables at an early age, such as achievement, aptitude, motivation and socioeconomic status.

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*The importance of the finding that intercourse was delayed is mitigated by two factors. First, the level of sexual activity was very high before the program was implemented—47 percent of the girls in the seventh and eighth grades had had intercourse, and 79 percent of all girls in the senior high school were sexually active. Second, the finding of a delay in initiation results from comparing the program schools before and after the implementation of the program; there are no comparisons with control schools.

Recent research in the United States has shown that many of the adverse health consequences of adolescent childbearing that were documented in earlier studies—such as pregnancy-induced hypertension, anemia, toxemia, prematurity and perinatal and maternal mortality—were greatly overstated because of a lack of adequate controls for socioeconomic status.[44] The (much reduced) deleterious effects of young maternal age that are still observed *within* socioeconomic strata are probably primarily due to inadequate prenatal care among adolescents.[45] Several studies have demonstrated that pregnancy outcomes among adolescents who receive good prenatal care are no different from, or are better than, those of older women.[46] The problem, of course, is that adolescents, especially very young ones, are much less likely than older women to receive any prenatal care or, if they do, are more likely to initiate it later in the pregnancy.[47] The reasons for such behavior include desiring to conceal or not recognizing the pregnancy; not realizing that prenatal care is valuable or available; and not being able to afford prenatal care.

British and U.S. studies show that a child's cognitive development is influenced by the age of its mother, even after the effects of background variables have been controlled. Children of young mothers fare less well than do others, though the difference is small. In contrast, there is no conclusive evidence showing a negative effect of young maternal age on the social and emotional development of children. In fact, in all these studies, maternal age proved to have much less influence than socioeconomic variables.[48]

Evidence from the United States suggests that women who have first births at a young age bear subsequent children sooner, have more unwanted and out-of-wedlock births,[49] face greater marital instability,[50] are more poorly educated[51]* and have fewer assets and lower incomes later in life[52] than do others. However, all these conclusions are drawn from studies in which the effects of some important background variables, particularly childhood achievement and motivation, could not be controlled because the data were not available. It is plausible, for example, that the ultimate educational attainment of adolescent mothers is lower not because they gave birth at a young age, but because they were performing poorly in school and would have dropped out even if they had not become pregnant.

The one study that does address this issue directly demonstrates that when the effects of preexisting factors are controlled, the adverse educational outcomes associated with early childbearing are reduced, but are not eliminated.[53] In this study, each woman who bore a child before age 18 was matched, on the basis of preexisting socioeconomic status, academic achievement, academic aptitude and educational expectations, with a woman who postponed childbearing until after age 20. By age 29, only half of the women in the early childbearing group had received high school diplomas, whereas nearly all those who postponed childbearing had graduated from high school. Similarly, only two percent of the women who had given birth before age 18 had obtained a college degree before age 29, compared with 22 percent of those who had not given birth by age 24. Women who bore their first child at an early age also bore subsequent children more rapidly than those who postponed childbearing.

A longitudinal study of (primarily) black adolescents living in Baltimore who became pregnant with their first child between 1965 and 1967 debunks the popular belief that early childbearing invariably leads to school dropout, many subsequent unwanted births and welfare dependency. In the five-year period following the birth of their first child, these adolescent mothers did very poorly when compared with their peers who did not bear children. But a follow-up study in 1984 revealed that a substantial majority had finished high school, had found regular employment and had eventually managed to escape dependence on welfare.[54] Nevertheless, on average, these women did not fare as well as they would have had they been able to postpone childbearing. The researchers conclude that, overall, the teenage mothers were limited in their ability to manipulate their circumstances in later life, but those who had been doing well in school, had high educational aspirations and had more economically secure and better-educated parents were more likely to succeed. Further, those who had borne no additional children in the five years following their first birth had had fewer constraints in attending school and accruing job experience. Not surprisingly, the women who had remained poor and dependent on welfare (who constituted one-quarter of the original group) were the most likely to experience employment problems and welfare dependency in later life.

Given the adverse consequences of teenage childbearing, we would expect the children of teenage parents to be relatively disadvantaged. Indeed, such children are more likely to exhibit lower academic achievement and to show a tendency to repeat their mothers' pattern of early marriage, early childbearing and high fertility, even when the effects of other background variables are controlled.[55] The consequences of poor educational performance among the children of adolescent mothers are particularly debilitating in terms of future success.[56] These adverse effects are most likely to occur when the mother raises her children without the support of the father or her own parents. Fortunately, several studies have found that *very* young mothers are less likely than others to leave their parents' home, so that their children enjoy a relatively optimal environment.[57]

## Possible Solutions

The preceding survey of adolescent sexual activity, pregnancy and childbearing, and of the determinants and consequences of such behavior, provides insights for evaluating strategies to solve the adolescent pregnancy problem.

• *Preventing sexual activity.* Undoubtedly, the most effective way to reduce the incidence of adolescent pregnancy would be to reduce the proportion of adolescents having sexual intercourse. This strategy is embodied in the Adolescent Family Life Act, which provides $10–$15 million per year to programs seeking to "promote self-discipline and other prudent approaches to the problem of adolescent premarital sexual relations . . . and . . . [to] promote adoption as an alternative to adolescent parenting." No proper evaluations of demonstration projects funded by this act have been published. Although sex education programs that emphasize personal responsibility may encourage some teenagers to postpone the initiation of sexual

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*One study concludes that the causation runs the other way: Increased education raises age at first birth, while age at first birth has no effect on education (see R. Rindfuss, L. Bumpass and C. St. John, "Education and Fertility: Implications for the Roles Women Occupy," *American Sociological Review*, **45**:431, 1980). However, this conclusion is probably flawed by an improper choice of statistical technique, and by a poorly specified model (the instruments for education and age at first birth are, respectively, father's education and a dummy variable indicating whether the woman had had a spontaneous abortion before her first birth). Further, the analysis was not restricted to teenagers, but included women who became pregnant at all ages. Even the authors of the study do not doubt that for many adolescents, childbearing truncates education.

activity, it seems much more likely that a large proportion of adolescents will become and remain sexually active despite exhortations to the contrary. While I lack hard evidence for this forecast, radical changes in sexual behavior seem unlikely, especially when sex is so pervasive in advertising, on television shows, in magazines and in movies. Therefore, I believe that efforts to promote chastity are not likely to solve the problem, regardless of their merits.

- *Promoting contraceptive use.* Given that almost half of all unmarried adolescents are sexually active, promoting effective contraceptive practice would be a more practical strategy for reducing adolescent pregnancy. However, legitimizing the use of contraceptives and making them widely available is a formidable task that would require fundamental changes in philosophy on the part of parents, clinicians, the media, schools, youth agencies, local, state and federal governments and the general public. Improving the availability of contraceptives would be much more effective as a strategy if ways could be found to increase the demand for them by strengthening adolescents' motivation to avoid pregnancy. The European experience proves that adolescents can use contraceptives very effectively to prevent pregnancy. However, three factors that are largely absent in France, the Netherlands, Sweden and the United Kingdom tend to inhibit contraceptive use in the United States: a misunderstanding of the risks and benefits of the pill, high levels of a fundamentalist, antisexual type of religiosity and large pockets of deep poverty.

Reliance on the pill, the most effective reversible method, is much less extensive in the United States than in the other countries. Despite evidence that the pill is an especially good method for sexually active adolescents (and almost all women), the American public is heavily influenced by myths about cancer, future fecundity and other side effects.[58] Additionally, the pill is much more expensive almost everywhere in the United States than it is in the other countries, where health services in general, and contraceptive services in particular, are heavily subsidized.

The other two factors—religiosity and poverty—are much harder to change because they are so ingrained in the social fabric of America. Fundamentalist groups condemn many types of sexual activity as immoral, particularly sexual relations among unmarried people. Their attempt to protect "traditional values" at all costs hinders the public provision of contraceptives, and inhibits public discussion about sexual matters. The fundamentalists' antisexuality is all the more problematic given the pervasive media messages extolling sexuality. Unfortunately, as we all recognize, our culture does *not* promote healthy sexuality, nor does it encourage contraceptive use. While concern about sexual morals is by no means absent in the other countries, it has less impact on public policy. The second factor, the existence of a semipermanent underclass in the United States, guarantees that many poor adolescents will perceive that they are not sacrificing a bright future by having a child. In the other countries, the state redistributes income to a far greater extent than it does here. Moreover, public education, health care delivery and other social services are more centrally controlled in European countries than they are in the United States; consequently, European countries can establish national policies that are much less subject to the influence of local interest groups.

In addition, increasing the effective practice of contraception among adolescents will be difficult because the use of all currently available contraceptives entails planning, and because no method is ideal in all respects. Adolescent pregnancy could be significantly reduced if a safe, relatively inexpensive, non–physician-dependent contraceptive were developed for use at the end of cycles during which intercourse occurs (thereby eliminating the need to plan ahead). However, such a method would be considered an abortifacient, and abortifacients are not eligible for federal research and development support. Further, drug companies generally do not believe that it is profitable to develop new contraceptives.[59]

A final consideration deserves mention here. The political controversy over contraceptive use among teenagers has pushed programs that promote contraceptive practice to demonstrate that such efforts do not increase sexual activity. Programs that emphasize responsible sexual behavior might have this desirable effect. But it is also possible—though no link has yet been demonstrated—that promoting contraceptive use, while decreasing pregnancy, could increase sexual activity. Should this prove to be the case, we would face a tradeoff between adolescent sexual activity and adolescent pregnancy. I would argue that the terms of the debate must be altered so that preventing pregnancy is itself judged the most important.

- *Providing contraceptive education and services in schools.* The schools are not the cause of adolescent pregnancy, and they cannot be restructured to cure the problem in the absence of other efforts. Nevertheless, I have little doubt that a combination of providing sex education in the schools, including information on contraceptives at an early age, and making contraceptive services widely available would increase contraceptive utilization rates. Although experience in the Netherlands (where there is a mass media approach to sex education) shows that a school-linked approach may not be necessary, I would argue that the incidence of teenage pregnancy could be reduced far more substantially at far less cost if the schools were involved. All adolescents attend school (most through age 18), and broad-based programs seem more likely to foster changes in attitudes and behavior through peer communication.

School-linked interventions can, of course, take several forms. However, the only program that has been evaluated with baseline data and controls is the one in Baltimore,[60] where sex education counseling and contraceptive services were offered in two schools serving predominantly poor inner-city blacks. In this program, the same personnel who staffed a special off-campus clinic for junior and senior high school students also gave lectures, led discussions and offered individual counseling in the schools during the regular school day. After school hours, the clinic remained open for educational and individual counseling sessions and offered contraceptive services to both males and females. After 28 months of operation, pregnancy rates decreased more than 30 percent in the program schools, while they increased almost 60 percent in the control schools. The success of this program lends strong support to the concept of a school-based model for delivering contraceptive services; however, it is only one of a range of options.[61]

Some school-based clinics are categorically oriented toward reproductive health, while others, particularly those that serve students who have no other source of care, provide comprehensive medical and dental services. Comprehensive clinics have two major advantages over single-purpose clinics: They can protect students' privacy, because other students and administrative personnel do not know the reason for their visit; and they can teach adolescents how to use the health care system. Clinics can be located in schools or, if the political atmosphere is charged, near schools. Clinics located outside schools have the option of remaining open in the evenings, on weekends and in the summer, and they may have more flexibility to serve those who are not currently enrolled in school.

Despite the variety of approaches for structuring clinic programs, there are several prerequisites for success. First, educational, counseling, medical and contraceptive services must be made easily accessible. Second, such services must be provided by well-trained professionals in a dignified and confidential setting. Third, community support is essential; without such support, programs can be killed through the efforts of a tiny minority of opponents. Even if these prerequisites are met, however, it must be recognized that adolescents are a particularly difficult group to serve. For example, a program that provided teenage family planning patients with special services designed to improve their ability to use contraceptives effectively and to avoid conception achieved neither of these goals. Despite vigorous staff efforts, a special counseling program failed to achieve parental participation. More surprisingly, the provision of periodic staff support to teenagers who were beginning to use and adjust to their contraceptive method did not result in more effective use or lower pregnancy rates when compared with the experience of a control group.[62]

- *Ameliorating the consequences of childbearing*. A final strategy that commands wide public support is to ameliorate the negative consequences of adolescent childbearing. Demonstration projects have focused on ensuring a safe pregnancy and delivery, reducing the likelihood of dropping out of school (particularly to increase employability) and preventing additional unintended pregnancies. Health interventions to promote safe pregnancy and delivery have proven to be very effective: Adequate prenatal and obstetric care greatly reduce the adverse health consequences to mother and child associated with early pregnancy and childbirth.[63]

Programs to keep pregnant adolescents in school and to prevent future unintended pregnancies have not met with the same success as programs to promote prenatal care. The results of Project Redirection—a comprehensive program for pregnant teenagers and teenage mothers that included continuing education, training for a job and learning about family planning—are disappointing. After one year of the program, Redirection participants were more likely than controls not in the program to be in school, to have graduated from school and to be practicing contraception, and were less likely to have had a subsequent pregnancy. After two years, however, the differentials had vanished.[64] The project's impact lasted no longer than the participants' stay in the program. Although Project Redirection was based on a research design substantially more rigorous than is typical for teenage parent programs, the comparison group had much wider access to local social service programs than had been anticipated. Thus, comparison of Project Redirection participants and controls does not reveal the difference in outcomes between "no treatment" and "comprehensive treatment" groups. A supplementary analysis compared four groups: Redirection participants in the program for one to two years; Redirection participants in the program for less than one year; controls who had ever been in a similar program; and controls who had never been in any program. The results, which must be interpreted with caution since the outcomes could reflect systematic variation in uncontrolled characteristics such as motivation, suggest that the more services a mother received, the better she performed. Nevertheless, the most reasonable conclusion is that short-term assistance does not have a long-term impact.

Programs like Project Redirection have considerable appeal because they focus on individuals *after* they become pregnant. Thus, they avoid both the controversy surrounding the prevention of adolescent pregnancy and the seemingly insoluble problem of poverty. Moreover, by being based in local communities and drawing on the services provided by existing programs, they appear to circumvent the need for additional resources. A review of the quality of comprehensive programs for pregnant teenagers, however, has concluded that the comprehensive model is better suited to political compromise and rhetoric than to effective problem-solving.[65] The authors argue that such programs are based on three faulty assumptions—that because the requisite services are already locally available, they need only be stitched together administratively; that program objectives can be met without additional state and federal funds; and that the adolescent pregnancy problem can best be addressed by targeting services to those already pregnant.

In summary, each of these short-term interventions is expensive, and only those focused on ensuring adequate prenatal care appear to be effective. The lesson to be learned is that *there are no "Band-Aid," quick-fix, inexpensive solutions for ameliorating the negative consequences of adolescent childbearing*. Given the variety of possible consequences—rapid subsequent fertility, low educational attainment, poor marriage prospects, high rates of marital dissolution and out-of-wedlock childbearing—the strong association between early childbearing and subsequent poverty[66] is not surprising. In fact, three out of four recipients of Aid to Families with Dependent Children (AFDC) who are under age 30 had a first birth as a teenager.[67]

A compelling policy issue, therefore, is whether to give priority to fertility prevention programs or to ameliorative schemes for reducing poverty. Recent work confirms the hypothesis that preventing adolescent childbearing would be a far more effective and less costly approach to reducing the proportion of young women who require public assistance than would increasing education, increasing marriage probabilities or reducing subsequent fertility among adolescent mothers.[68] Such findings are reassuring, because the public cost of teenage childbearing is substantial: In 1985, nearly $17 billion was paid through AFDC, food stamps and Medicaid to women who first gave birth as teenagers.[69] Further, each family that began with a first birth to a teenager in 1985 will cost the public an average of $13,902 over the next 20 years. If all teenage births were delayed until the mother was at least 20 years old, the potential public savings would be $5,560 for each birth delayed, and an aggregate $2.06 billion for all births postponed.[70]

## Discussion

I have never heard an adult argue that adolescents should bear children. Most adults recognize that having children at an early age narrows the life options of women (and those men who take responsibility for their children); they also know that children's life chances are enhanced by having parents who are emotionally mature and financially secure. My own attitude toward teenage pregnancy is primarily shaped by a belief that children are the most important asset of society, and society has an obligation to enable each child to realize his or her potential; the motto of the United Negro College Fund, "A mind is a terrible thing to waste," is particularly compelling.

This belief leads me to conclude that reducing teenage childbearing should be our first priority. If necessary, I would sacrifice the goals of reducing adolescent sexual activity and adolescent pregnancy to attain this one. I am also convinced that teenage childbearing is an especially acute problem among the poor, and that restoring Medicaid funding of abortions would help to reduce its incidence.* More importantly, doing so would enhance the reproductive choices available to all poor women in this country. Another way to reduce teenage childbearing—by reducing teenage pregnancy—among the poor would be to expand school-linked programs similar to the one in Baltimore. While intervention programs will be implemented in greater numbers of school districts in the near future, their total number will undoubtedly remain tiny relative to need, because these programs are so easily derailed by political opposition. Nevertheless, it is encouraging that such programs can make a difference among minority and poor students, who are generally the least motivated to avoid childbearing because of their limited life options.

Improving the life options of this group would appear to necessitate fundamental changes in society, which are far more difficult to implement and therefore less likely to occur. Such changes would involve a leveling of the playing field in infancy, childhood and adolescence, so that the poor, and especially the minority poor, could more easily tread paths to a better life. However, there are no easy solutions for shrinking the size of the underclass, although several proposals (such as workfare) may help. Moreover, major social initiatives are likely to be politically unpopular in this era of big budget deficits and tight budgets. Progress will almost surely require improving the quality of public education. Fortunately, virtually nobody believes that the schools cannot be improved. Unfortunately, there is little consensus about the precise shape such reforms should take. Furthermore, reform will not be cheap, and I doubt that it can be financed solely or even primarily by eliminating the "excess fat" from school budgets. Still, given the renewed political salience of education reform, I would expect to see modest improvements in the near future.

A new emphasis on healthy sexuality would also make a substantial dent in the incidence of teenage pregnancy and childbearing. For sexuality to be healthy, both males and females need to accept responsibility for the consequences of their sexual behavior; in addition, they must have the ability to say no to sex and to respect a partner's "no." Healthy sexuality would also involve the use of contraceptives until a conscious decision is made to have children, bringing closer the goal of "every child a wanted child." These are clearly not the messages adolescents now receive from their parents, churches, schools and the media.

Although I can offer no clear-cut plan for effecting change, it seems obvious that the schools will need to play a role in promoting healthy attitudes toward sex. I cannot imagine another social institution capable of providing so many young people with the information they need to make informed choices. Like many citizens, I am troubled by the prospect of schools' teaching (or preaching) a certain set of values. But I do think that good teachers can raise issues in the classroom that invite students to think about and reassess their own values, so that the resulting value system is their own. It is possible that such a change in values might result in more, rather than less, sexual activity among adolescents. However, because my own goal is to improve the quality, not decrease the quantity, of sexual relationships, I would cheerfully choose the Swedish over the American status quo. Although social conservatives would favor a Japanese status quo—a low prevalence of teenage intercourse and very low rates of teenage pregnancy and childbearing—I believe it is unattainable here.

Frankly, although I would welcome the changes discussed above, I do not think they are likely to occur anytime soon, if ever. There remains the prospect of an innovation in contraceptive technology. A contraceptive that would be inexpensive, safe, effective, easy to use, and not require an encounter with the medical system would be welcomed by many, including teenagers for whom cost and visits to medical facilities are very real barriers to contraceptive use. While such an innovation may seem unlikely because the drug companies do not place great emphasis on contraceptive research, the pace of innovation in molecular biology and genetic engineering has been rapid in the recent past, and a contraceptive breakthrough might come unexpectedly as a by-product of other efforts.

Fear of AIDS should reduce the incidence of sexual activity or increase reliance on the condom, although little change in either behavior has been documented thus far. If sexual activity declines, so should the incidence of pregnancy, unless the people who abstain because of AIDS are the same ones who would otherwise use effective contraceptives. Greater reliance on the condom would help reduce the incidence of gonorrhea, chlamydia and AIDS, but might increase the incidence of pregnancy if young women switch to it from the pill. The impact of AIDS on poor and minority adolescents is particularly unpleasant to contemplate, because AIDS and HIV infection are rapidly becoming concentrated in the underclass. Should current adolescent sexual behavior persist in this group, increasing numbers of young women and men will become infected, with tragic consequences for them and their children.

What, then, should those who are concerned about teenage pregnancy and childbearing do? We must try to effect whatever changes, preventive or ameliorative, we can. There is currently no single strategy for solving the problem, and I would guess that none will emerge in the near future. Recent proposals made by the National Academy of Sciences panel on teenage pregnancy[21] are particularly thorough and well reasoned; the 65 pages devoted to priorities for data collection, research, policies and programs constitute a blueprint for addressing the problems of teenage pregnancy. Progress will come only through a series of such efforts, each with small, though important, effects.

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*About 80 percent of women who would have received Medicaid-funded abortions obtained abortions on their own after Medicaid funding was curtailed (see: J. Trussell et al., "The Impact of Restricting Medicaid Financing for Abortion," *Family Planning Perspectives*, **12**:120, 1980). This year, there will be about 517,000 pregnancies among poor teenagers, of which 355,000 will end in births and 162,000 will end in abortions. If abortions were 25 percent more prevalent (=1/0.8), there would be 41,000 (12 percent) fewer births.

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# Abortion in Context: Historical Trends and Future Changes

*By Alice S. Rossi and Bhavani Sitaraman*

## Summary

Reform of abortion laws in the United States stemmed from concern over the health consequences of illegal abortion. Feminists were relative latecomers to the movement, and abortion did not become a major political issue until after the *Roe* v. *Wade* decision by the Supreme Court. Most social scientists began to study public attitudes toward abortion, which have been relatively stable since that 1973 decision, only after the Supreme Court ruling, and they thus probably missed documenting the period in which the major attitudinal changes occurred.

Polls show that the American public is most likely to approve of abortion when there is a fetal defect and when the pregnancy endangers maternal health or is the result of rape. These single reasons do not seem to jibe with the complexities of real life, however. The majority of women who have abortions indicate more than one reason for doing so, and the major reasons given concern the conflicting responsibilities of school, work and family and an inability to afford another child.

A view of the abortion controversy that puts it into a larger context than do most polls and most American research suggests that legal abortion in the United States is unlikely to be jeopardized in the long run. The trend in most Western industrial nations is toward a more secularized society that features more individual discretion and less control by religious and political institutions over private aspects of life. In the immediate future, a number of factors will perpetuate the need for access to abortion. Among them are early sexual activity that often results in pregnancies among very young women; dim prospects for innovative technological advances in the contraceptive field; and the AIDS epidemic, which may result in the use of contraceptives that are more effective against that deadly virus but less effective at preventing pregnancy. Nor will abortion decisions become any easier for the families and individuals involved, as technology continues to advance in its ability to identify fetal defects and to keep alive babies born at earlier and earlier stages of gestation.

**"The antiabortion movement has succeeded only in imposing a temporary brake on a long-term historical trend toward increased public acceptance of abortion in early pregnancy as . . . a private matter in which the state should not interfere."**

## The Movement for Reform

Medical concern for the health consequences of illegal abortion stimulated reform of abortion laws in the United States, as it had earlier in the 20th century in Western Europe. Reformers from the legal and public health fields, together with medical experts concerned for maternal health, predominated at the major national conferences on abortion in the United States in the 1940s–1960s.[1] These conferences in turn paved the way for legislative attempts to remove abortion from state penal codes, using as an example the model code developed by the American Law Institute. Hence, the American reform movement had its beginnings in professional circles: it was not on the agenda of the major American political parties in the 1960s, as it had been on the agenda of socialist parties in Western Europe since early in the 20th century.[2] American reform advocates joined the effort to remove abortion from penal codes with an argument for medical regulation of abortion that would follow the Swedish pattern, in which hospital committees on abortion would grant or deny access to a legal abortion in their institutional setting.

American feminists were relative latecomers to the abortion reform movement. Early in the century, feminist effort was narrowly focused on campaigns to secure the right to vote. When the renascence of feminism began with the founding of the National Organization for Women (NOW) in 1966, the focus was on securing wider opportunities for women in education, politics and the work force. NOW added reproductive freedom to its agenda two years later, at a stormy annual meeting that led to the withdrawal of several prominent Catholic members who went on to form the Women's Equity Action League, which retained an exclusive focus on economic issues. The NOW position on abortion centered on access to legal abortions for whatever reasons the woman, in her own judgment, found sufficient. This position led to an uneasy coalition between legal and medical advocates of reform on the one hand and feminist advocates on the other,* because the feminists rejected the notion that physicians, as experts "on

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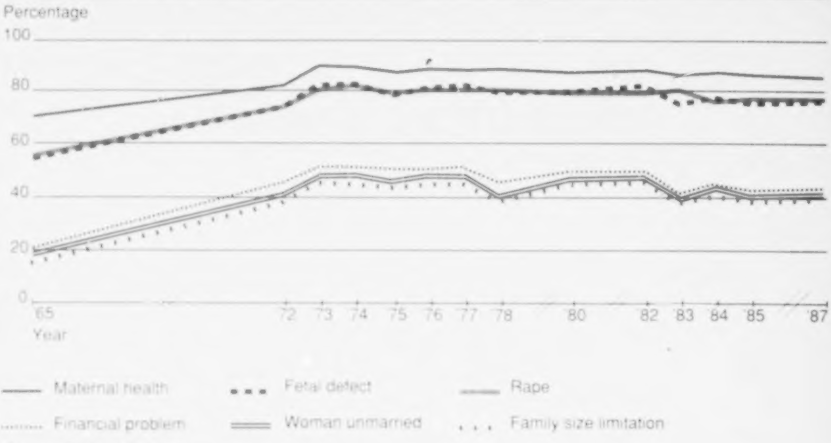
*This uneasy coalition also provides a point of historic contrast to developments in Western Europe, where abortion reform was spearheaded by radical and liberal political parties in collaboration with radical feminists. Hence, concern for the health effects on married women of illegal, unsafe abortions and numerous, closely spaced births—combined with socialist and feminist concern for social class and gender inequities—produced the groundswell for legal reform of abortion in Western Europe a half-century before the abortion reform movement got under way in the United States. (See: A. Bebel, *Woman and Socialism*, Socialist Literature Co., New York, 1910.)

top," should hold the power to grant or deny a woman's request for a legal abortion. In the feminist view, physicians should serve only as experts "on tap," to be consulted and to perform the abortions, not to control access to them.

Hence, the landmark *Roe* v. *Wade* Supreme Court decision in 1973 was the result of many years of concerted effort at legal and regulatory reform of abortion. Professional concern for women's health among lawyers and physicians contributed to a growing pressure for liberalization of the grounds for legal abortion, but this was a quiet, inconspicuous movement compared with the highly vocal campaigns for the human rights of women, blacks, the elderly, the handicapped and even children. This broad and growing array of social movements likely provided the momentum that culminated in the critical turning point represented by the Supreme Court decision. Quietly in the background, rarely noted at the time in abortion reform circles, were the beginnings of a nascent antiabortion movement: The National Right to Life Committee and Birthright were formally organized in 1968.

**Figure 1. Percentage of public approving of abortion under various circumstances, by survey year, 1965–1987**



Source: See reference 5.

## Trends in Public Attitudes

The political and professional movement for legal reform was well under way before social scientists and polling organizations began to study public attitudes toward abortion. Attitudes had probably been slowly becoming more liberal long before the first national survey on the topic was conducted in 1965.

To chart an overview of trends in public attitudes toward abortion in the United States, we rely primarily upon data from the General Social Survey (GSS), conducted each year by the National Opinion Research Center (NORC) at the University of Chicago. Questions on approval or disapproval of legal abortion under a series of six circumstances were first included in a NORC national survey in 1965, then not again until 1972, when the annual GSS was initiated. The abortion questions were asked each year between 1972 and 1978, and subsequently on a less regular schedule, as NORC began to rotate its growing battery of social indicators of public opinion.

Figure 1 shows the trend in public attitudes toward abortion from 1965 to 1987. It reveals very dramatically that researchers who have limited their inspection of trends in abortion attitudes to the period beginning with the first GSS in 1972 have missed the most important period of attitudinal change that we can document with national data—the interval from 1965 to 1973. Speculation that the Supreme Court decision legitimizing abortion encouraged more liberal views has focused on the upturn in approval of abortion between 1972 and 1973, but that upturn was merely a continuation and culmination of an attitudinal change that had been taking place over the previous decade or more.*

Since 1973, public support of legal abortion has shown a slight decline and a more erratic profile, with a dip measured in 1978 that some analysts attributed to growing strength in the right-to-life movement. But that same movement was just as active between 1978 and 1980, when the NORC survey seemed to indicate an upturn in liberal support. It is probably unwise to link minor shifts in public attitudes over a short span of years to specific political developments in the nation at large; this is particularly true of shifts found in a series of cross-sectional surveys in which *different* respondents are interviewed in each survey, as opposed to those found in a longitudinal study of the *same* respondents interviewed several times over a period of years. The topics covered in the GSS surveys vary greatly from year to year; in any given year, some are repeat items that appear in every survey, while others appear for the first time or appear periodically. As a result, the questions preceding the abortion items in the NORC interviews have varied widely in topic—for example, attitudes toward divorce in 1977 and 1982, the qualities considered desirable in children and ideal family size in 1978, race relations in 1980, and victimization experience in 1983. What appears to be year-to-year change in public attitudes on abortion may in fact reflect contextual or order effects caused by the sequence of questions within which the abortion items were embedded.

Most of the differences between the GSS results in the past decade amount to no more than a few percentage points. The least change, as indexed by the range in approval in the 12 surveys conducted between 1973 and 1987, concerns maternal health as a reason for abortion, a decline in approval of only five percentage points—from 91 percent in 1973 to 86 percent in 1987. The greatest change concerns abortion among unmarried women, a decline from 48 percent in 1973 to 38 percent in 1983. Since liberal reform had its ascendancy in the 1960s and the conservative backlash has been very intense in the past decade, what is remarkable is the robust stability of public views toward abortion over the past 15 years. The second firm result of the NORC trend data is not the slight overall decline since 1980 but the lack of variation in the ranking of qualified approval of legal abortion as a function of the social and physical circumstances facing the pregnant woman. In our view, for

*Furthermore, as Judith Blake has pointed out, two years later, in a 1975 Gallup survey, less than half the public even knew about the 1973 Supreme Court decision. She also points out that there was little public support for the Court's 1976 decision affirming a minor's right to obtain an abortion regardless of spousal or parental approval, because just a year before, the 1975 Gallup survey showed only one-third of the respondents approved a woman's right to an abortion if her husband was opposed. Blake concludes from this that the Supreme Court did not have any significant effect on public opinion, though it of course was a significant catalyst for antiabortion activism. (See reference 4.)

reasons to be explicated below, the antiabortion movement has succeeded only in imposing a temporary brake on a long-term historical trend toward increased public acceptance of abortion in early pregnancy as a woman's right and a private matter in which the state should not intervene.

### Attitudes vs. Behavior

In 1965, as in 1987, the American public drew sharp distinctions between maternal health, fetal defects and pregnancy as a consequence of rape—circumstances that the majority approved as grounds for abortion—and being poor, not wishing to marry the sex partner and already having the family size desired—circumstances that fewer than half approved as justifying abortion. These results pose two important questions: Why does the public draw so sharp a distinction between the two sets of circumstances, and how do the circumstances cited in the attitude items compare with the real-life circumstances of women who have obtained abortions?

We suggest that the first set of circumstances are viewed by the public as situations over which a woman has little or no control: She was the victim of disease, genes or a rapist. Nor do these three circumstances imply any socially unacceptable sexual behavior initiated by the woman or any irresponsibility on her part, which the public may often impute to the second set of circumstances: If a woman is poor or unmarried, she should either avoid sex or use effective contraceptives. In addition, a child born to a poor or unmarried woman is presumably healthy and could be adopted by couples who would provide loving care. The least defensible ground for an abortion, in the public's view, is to prevent the addition of another child to a family that is considered complete. Many American adults may reject the idea of abortion under this circumstance for several reasons: The couple (or woman alone) could exert extra effort to increase their income, could seek help from kin or public welfare, or could undergo a change of heart and welcome the birth.

In fact, the historical experience of adults who are middle-aged or elderly in the 1980s may predispose them to have little sympathy for family-size limitations and unwillingness to marry the sex partner as the grounds for abortion. When they were young, today's older adults were more apt to marry when a premarital pregnancy was diagnosed than younger adults are nowadays. Furthermore, as parents of the baby-boom cohort, Americans in late middle age in the 1980s had had large families themselves, whereas the elderly in the 1980s had had fewer children than they wished because of the economic hardship imposed by the Great Depression. Those who have experienced having fewer children than they wished may be particularly unsympathetic to abortion under any but dire health circumstances.

A long-standing social norm in human history may also be at work in producing the very sharp differences in public approval of abortion associated with the circumstances surrounding a pregnancy. Pronatalist norms, with or without reinforcement by religious values, do not change easily in any human society. For centuries, fertility was highly valued and socially encouraged simply to keep a small edge ahead of mortality in the human population. The transition to a low-fertility profile under the pressures produced by human population growth is an ongoing process, difficult for many people to comprehend. It is, after all, only since 1950 that even social scientists and policymakers have become generally aware of the serious ecological and political consequences that may flow from excessive population growth rates around the world. When social norms have been deeply ingrained for long stretches of history, normative change comes slowly and deviation from the norm is exempted from negative sanctions only under the most extreme circumstances. The powerful norm for parents to protect their children from harm is one that is extended by many adults to protection of a potential child in an early pregnancy. The circumstances that justify an exemption from such a powerful norm must themselves be situations with few alternatives. Serious threats to a mother's health, a high probability of producing a defective child, and a pregnancy that results from rape or incest are therefore approved as reasons for abortion, while what is viewed as irresponsible sexual behavior, a difficult financial situation or simply a desire to limit family size are not considered reasons strong enough to override the persisting, pronatalist elements of very deeply rooted norms.

The exemption mechanism operates on two levels. The first is a general level of normative endorsement: The NORC questions asked, "Should a woman have access to a legal abortion if . . . ," followed by each of the six circumstances we have reviewed. The second type of exemption is an individual-level behavioral exemption, when adults are themselves confronted with complex problems on which very difficult decisions must be made. The fit between the generalized exemptions suggested by responses to hypothetical survey questions and the actual behavioral exemptions by individuals faced with complex real-life situations of their own may be inexact. In a survey of women who had abortions in 1987,[6] Aida Torres and Jacqueline Forrest found that very few women reported having had abortions because of a maternal health problem (seven percent) or a possible fetal health problem (13 percent), the circumstances that trigger overwhelming approval for abortions in public attitude surveys. And, fortunately, few women become pregnant as a result of rape or incest.

Included in the major reasons for actually having an abortion were precisely those circumstances about which the public shows the greatest ambivalence and least consensus: Half of the sample of women who obtained abortions in 1987 had no likely marital partner or were in a problematic relationship, and two-thirds reported that they could not afford to have a child. But by far the largest cluster of reasons for having an abortion concerned conflicting responsibilities between school, work and family, reasons cited by three-quarters of the women who had abortions. We shall return at a later point to a discussion of the significance of this finding.

The results of the survey of women with abortion experience also underline the inadequacy of single-item attitude surveys. Merely seven percent of the women respondents cited only one reason for having an abortion; the average was close to four reasons. This illustrates the complex real-life situations women confront when they have accidental pregnancies, a complexity difficult to capture in survey research on attitudes. The factorial survey method attempts to handle such complexities by grouping dimensions relevant to an issue in computer-generated random combinations. Each dimension is independent of every other that enters a vignette describing a life situation that calls for a judgment or decision of some kind.[7] The junior author of this article has designed a study of abortion attitudes using this technique. The study includes nine dimensions considered relevant to the abortion decision: a woman's age, marital status, health status, number of children, weekly household income, quality of the couple's relationship, number of months pregnant, spousal or parental attitude toward an abortion and circumstances surrounding the pregnancy. Respondents read randomly assigned vignettes describing women with various characteristics and rated the extent of their approval of the abortion decision.

Preliminary results of this study (based on a sample of adults in a middle-sized city in western Massachusetts) confirm and extend the findings of the NORC-type attitude surveys: The dimensions with the most significant impact on approval of the abortion decision, exclusive of all other dimensions, were the health of the woman, gestational phase of the pregnancy, and circumstances surrounding the pregnancy. Approval ratings were highest when the woman in the vignette was in very poor health, was in the first trimester of pregnancy, and had been raped by a brother (6.9 on a 9.0-point scale). A woman who simply wanted to remain childless evoked the lowest mean approval rating (4.4 on the scale). Intermediate levels of approval were found if the relationship was unhappy or if the income level of the woman was very low. The woman's marital status, spousal or parental approval, age and number of children had no statistically significant effects on approval levels.

The null results on the age dimension masked an interesting interaction between the age of the respondent and the age of the woman in the vignette. Respondents older than 60 showed the lowest level of approval of an abortion decision when the pregnant woman was an adolescent and the highest approval when she was in her 40s; the youngest respondents, in their 20s, showed the reverse profile—the most approval for the adolescent and the least approval for the older woman. These results are in accord with the probable historical cohort and personal life experiences of the respondents: When women now older than 60 were in their childbearing years, the most prevalent cases of abortion involved older married women, while women now in their 20s know that recent abortions involve more young unmarried women than older married women.

While results from such analyses add to our understanding of the structure of public attitudes toward abortion, they do not yet approximate the complexity of the real situations of women who obtain abortions. Until more research is conducted that deals with the interactive effects of various situations and the characteristics of the woman, it will continue to be difficult to distinguish between methodological and substantive factors in explaining the lack of fit between the circumstances that lead to actual abortions and the circumstances under which the public says it approves or disapproves of an abortion.

## Determinants of Attitudes

A considerable amount of research in the past decade has tried to interpret the abortion attitude trend data, either by searching for their demographic correlates in sex, age, education, religion and race[8] or by exploring how abortion attitudes relate to attitudes in other domains.[9] Protestant-Catholic differences are found to be minimal, once a measure of religiosity is introduced: Regular church attendance is more significantly related to abortion attitudes than religious affiliation per se. Blacks are more likely than whites to approve of abortion on grounds of poverty, and whites are more likely than blacks to approve on grounds of being unmarried; the addition of measures for attitude toward gender roles, premarital sex, and support for the Equal Rights Amendment increases the amount of explained variance in racial attitudes beyond that explained by demographic variables alone. The majority of the public does not hold strong views about abortion, however; most are fence sitters who feel considerable ambivalence toward legal abortion. If anything, the fence sitters would tip more to the antiabortion than the prochoice pole of opinion, because their views on other issues, such as euthanasia, suicide, and politics, are more conservative than liberal.[10]

Two Louis Harris polls in 1985 pinpoint some moderate degree of change away from liberal positions in several subgroups of the population: adults younger than 30 and older than 65, those with less than a high school education, blacks, southerners and white born-again Christians.[11] Table 1 shows the level of support given to the Supreme Court's abortion decision by respondents in the September 1985 survey and the percentage decline in support for legalized abortion from the level of January, nine months before. The decline in support among the youngest and oldest respondents is consistent with the longer time trend analyzed by Helen R. Ebaugh and C. Allen Haney, who show that both the youngest and the oldest age-groups became more conservative in the early-to mid-1970s, before all age-groups shifted slightly in the conservative direction.[12] Research results on age of respondent and abortion attitudes are very much in need of cohort analysis to disentangle the ambiguities implicit in cross-sectional analysis of age-attitude trend data.

**Table 1. Percentage of public favoring the 1973 Supreme Court decision on abortion and the percentage change from nine months earlier, by various characteristics, 1985**

| Characteristic | N | % favoring | % change |
|---|---|---|---|
| **Total** | **1,257** | **50** | **–6** |
| **Gender** | | | |
| Women | 651 | 48 | –5 |
| Men | 606 | 51 | –8 |
| **Age** | | | |
| 18–29 | 355 | 51 | –9 |
| 30–49 | 224 | 57 | –1 |
| 50–64 | 156 | 43 | –3 |
| >65 | 156 | 41 | –13 |
| **Education** | | | |
| < High school | 207 | 32 | –13 |
| High school graduate | 432 | 49 | –4 |
| Some college | 286 | 62 | –1 |
| College graduate | 328 | 67 | –4 |
| **Race** | | | |
| White | 1,054 | 51 | –5 |
| Black | 115 | 42 | –15 |
| Hispanic | 88 | 47 | +5 |
| **Religion** | | | |
| Protestant | 730 | 49 | –5 |
| Catholic | 376 | 47 | –6 |
| White born-again Christian | 185 | 31 | –8 |
| **Politics** | | | |
| Conservative | 434 | 42 | –9 |
| Middle of road | 490 | 55 | –2 |
| Liberal | 277 | 56 | 6 |
| **Region** | | | |
| East | 312 | 54 | –6 |
| Midwest | 311 | 48 | 0 |
| South | 388 | 42 | –10 |
| West | 246 | 61 | –5 |

Note: The question read, "In 1973 the U.S. Supreme Court decided that state laws which made it illegal for a woman to have an abortion up to three months of pregnancy were unconstitutional, and that the decision on whether a woman should have an abortion up to three months of pregnancy should be left to the woman and her doctor to decide. In general, do you favor or oppose this part of the U.S. Supreme Court decision making abortions up to three months of pregnancy legal?"

Source: See reference 11, Table 25.

## Politics and Abortion

Social scientists do not have an outstanding record where the ability to predict the emergence of social movements is concerned, but they are quick to chart their development and impact once they are highly visible on the political stage and receive extensive media coverage. In the aftermath of the Supreme Court decision in 1973, right-to-life organizations and the Moral Majority became extremely active and highly visible in American politics. As the abortion controversy became increasingly polarized, social scientists began to report on the new politics of abortion,[13] including the effect of abortion views upon voting behavior,[14] the political actions of antiabortion advocates against abortion facilities[15] and more detailed ethnographic portraits of the leaders on both sides of the issue.[16]

Two major findings stand out in the research on abortion attitudes and voting behavior. The first is that abortion as an issue is not considered a top priority by voters. When asked in a 1987 poll conducted for the National Abortion Rights Action League (NARAL) by a bipartisan pair of polling organizations which of four issues "concerned them personally the most," respondents cited abortion least frequently (eight percent); it was exceeded by AIDS, education, and the federal budget deficit (15 percent, 27 percent and 47 percent, respectively).[17] The second major finding is that abortion is not a partisan issue. In 1984, the survey conducted by the Center for Political Studies of the University of Michigan showed that a majority of voters for both parties took prochoice positions on abortion—61 percent among Mondale-supporters and 54 percent among Reagan-supporters.[18] The NARAL-sponsored poll showed a similar lack of partisanship in public views toward a constitutional amendment prohibiting abortion: Fifty-eight percent of Republican voters and 64 percent of Democratic voters opposed the amendment. An even larger proportion agreed that abortion was a private matter in which the government should not interfere: Seventy-three percent of Republican voters and 78 percent of Democratic voters took this position.[19]

One of the important functions served by public opinion polls has been to demonstrate the absence of alignment on abortion by race, religion, gender and political party affiliation and to bring these findings to the attention of political leaders. This is important because politicians are exposed far more to the official views of sharply opposed interest groups and to the equally polarized depictions reported in the media than they are to the general views of their constituents. In the 1960s, when abortion reform was concentrated on state penal code revisions, the results of the 1965 NORC survey (showing minimal differences between Catholics and Protestants in views on abortion) were of critical importance in convincing members of the New York State legislature that the official position of the Catholic Church did not represent the views of most Catholic Americans.*

Even now, many members of the U.S. Congress persist in believing that a strong prochoice position on abortion carries heavy penalties in efforts to win reelection. A detailed review of the evidence from federal elections between 1974 and 1986 shows that this is not the case: In general, antiabortion efforts to defeat prochoice incumbents have not succeeded.[20] Following the 1986 congressional elections, for example, the antiabortion movement found itself on the defensive: With three Senate seats won by prochoice advocates and the Senate again under the control of the Democrats, the president of the National Right to Life Committee suggested that its members rethink any plans to seek state referenda, because "a referendum on our issue is very difficult to win."[21] However, in the November 1988 elections, three states passed referenda approving restrictions on state funds for abortion services to poor women—two of them (Colorado and Michigan) by wide margins. By contrast, no prochoice incumbent in the U.S. Senate lost to an antichoice challenger in the 1988 elections, and three new prochoice senators replaced antiabortion senators.

From evidence such as this, it appears the crest of the conservative backlash against the Supreme Court decision on abortion has passed. There is also evidence of fragmentation within the ranks of the evangelical movement, which contributed many of the most vocal antiabortion advocates. After a decade in which we saw a spectacular rise among TV evangelists, we have witnessed the fall from grace of Jimmy Swaggart and Jim and Tammy Bakker and a distancing from them by others in the evangelical movement.

## Long-Term Context

With the benefit of hindsight, one might well wonder whether the political controversy of the past 15 years over abortion was a predictable phenomenon and whether there may be yet another resurgence of conservative pressure to prohibit abortions in the future. In the heat of a political controversy, a detached and distanced perspective on long-term historical trends may get lost. Nonetheless, we suggest that it is important and useful to attempt precisely such a long-term view. Significant political, social and normative change is rarely a smooth linear progression; it proceeds by fits and starts in a dialectic process necessarily subject to deflections and vacillations. We have seen this in recent decades in fertility trends in the Western industrial nations: The post–World War II years, marked by a rise in religious participation and a renewed trust in basic institutions after the shattering experience of two world wars and the Great Depression,[22] produced a baby boom that challenged the demographic predictions of a long-term trend to low-fertility rates. Fifteen years later, the low-fertility direction reasserted itself.

We are convinced of the utility of placing the abortion controversy in a much larger context, a time frame that deals not with years but decades and a framework of ideas in which abortion is one among many beliefs and social values. The framework we propose draws upon a recent brilliant paper by Ron Lesthaeghe and Jon Surkyn, which explicates a process for measuring the secularization of society and tests it against data from the European Values Studies (EVS), periodic surveys in a dozen countries in the European Economic Community.[23] An extension of earlier work by Lesthaeghe and Ronald Inglehart,[24] their endeavor attempts to synthesize theories from economics and sociology, by treating values, tastes and life goals as independent and interactive variables on a par with more standard economic measures.

By secularization, the authors mean a declining adherence to organized or institutionalized religion, such that Western religious institutions have undergone a change from an overarching system that sought to control all aspects of life to a subsystem alongside other subsystems. A good example is the process of secularization among American Catholics, who have gradually rejected church control over many private aspects of life (e.g., premarital sex and divorce, use of contraceptives and family size) while retaining core religious beliefs (in salvation and damnation, God, the soul and life after death) and respect for their ethnic and local community and traditions.[25]

The loosening of religious institutional controls translates into more latitude in individual morality and the diversified moral code of a pluralist society. Lesthaeghe and Surkyn posit a continuum from acceptance of institutional regulation at one end to accentuation of individual discretion at the other, and they apply this construct to a variety of domains of social life. Table 2 (page 278) summarizes these domains and indicates the values that they believe would be attached to them at the two poles of the continuum.

Using the same domains of social life and a more specific set of indicators from

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*This judgment is based on correspondence between the senior author of this paper and several New York State legislators to whom copies of the 1965 NORC survey results on abortion attitudes were sent. The legislators acknowledged the importance of the finding of minimal Catholic–non-Catholic attitude differences to their own political efforts to change state laws.

**Table 2. Value placed on aspects of various domains of social life, by whether a given society emphasizes institutional regulation or individual discretion**

| Domain | Institutional regulation | Individual discretion |
|---|---|---|
| **Religious and moral values** | | |
| Traditional beliefs (God, sin, heaven) | Strong | Weak |
| Institutional religion (attendance, church's teaching) | Frequent, accepted | Absent, rejected |
| Ten Commandments morality | Most accepted | Basic ones accepted |
| Permissiveness (homosexuality, tax evasion) | Rejected | Inclined to |
| **Educational qualities** | | |
| Conformism (obedience, neatness) | Stressed | Not stressed |
| Pluralism (tolerance) | Not stressed | Stressed |
| Imagination, leadership | Not stressed | Stressed |
| **Political values** | | |
| Leftism (control means of production) | Owner-controlled | More worker control |
| Confidence in institutions | High | Low |
| Protest proneness (petition, strike) | Low | High |
| National pride | High | Low |
| Supranationalism (world view) | Low | High |
| **Work values** | | |
| Personal satisfaction/self-fulfillment | Not stressed | Stressed |
| Material condition | Important | Less important |
| **Marital and family values** | | |
| Traditionalism (marriage as institution, social endogamy) | Stressed | Not stressed |
| Sexual freedom | Rejected | Tolerated |
| Parenthood (children necessary, respect for parents) | Stressed | Relaxed |

Source: Adapted from R. Lesthaeghe and J. Surkyn, 1988, op. cit. (see reference 23), p. 14.

the 1981 EVS, Lesthaeghe and Surkyn show that such factors as a strong public morality and greater religiosity are indeed negatively correlated with the emphasis EVS respondents place on individual discretion (Table 3). Positive correlates are the educational qualities of imagination and independence, approval of greater employee control over the means of production, and a willingness to engage in political protest, as well as acceptance of sexual freedom, easier divorce, and unmarried motherhood. Several points are of interest in the thesis and its test with EVS data, but for the purposes of this discussion, note that sexual matters are viewed as part of two domains—marriage and the family, and religion and morality—and they are placed in a conceptual framework that embraces a wide array of other values as well.

The Lesthaeghe-Surkyn work goes on to suggest a long-term historical change in the highly developed Western democracies toward secularization and individual discretion. The theory and data used to test it are European in origin, but we submit that they are applicable to the United States as well. Demographers have long observed that trends in Europe—particularly in the Scandinavian countries and particularly in domains such as marriage and fertility rates, cohabitation patterns and religious participation—are harbingers of things to come in the United States. In other words, we often lag behind Europe on such matters. Unfortunately, American social scientists often lag behind their European counterparts in theoretical developments as well: There have been no studies in American social science that have had so ambitious a goal as to measure and trace change over time in fundamental social, political and religious beliefs as the EVS has done collaboratively in a dozen countries over a 16-year period.

Not all countries are at the same stage of change in all the belief domains covered by the EVS. We suspect that secularization has advanced further in the Scandinavian countries than in the United States, and individualism may be more marked in urban centers in Denmark than in England. Nonetheless, in an interdependent global community, international influences between Western democratic nations can now occur more quickly and more intensively across the Atlantic than interregional influences across the American continent did in the past. In addition, quite apart from international influences, some of the same processes of social change occur independently in countries sharing a common heritage and a common profile of economic development. Student protests in the mid-1960s, peace movements in the 1970s, and environmental concerns in the 1980s are all examples of responses that occurred in both America and Europe to similar circumstances. Our suggestion that the European trends apply as well to the United States must remain largely a tacit assumption, however, until some comparable studies are conducted in the United States.

The utility of this larger conceptual framework is as an aid in maintaining a more detached perspective while living through the ebb and flow of social change.

**Table 3. Coefficients of correlation between selected items typifying domains of social life and a single factor measuring the degree of emphasis on individual discretion, European Values Study, 1981**

| Domain | Coefficient |
|---|---|
| **Religious and moral values** | |
| Belief in God | −0.45 |
| Belief in heaven | −0.49 |
| No. of 10 Commandments accepted | −0.58 |
| Church attendance at least once a week | −0.42 |
| Never justified: | |
| Tax evasion | −0.21 |
| Divorce | −0.32 |
| Abortion | −0.38 |
| Euthanasia | −0.36 |
| Suicide | −0.32 |
| **Educational qualities** | |
| Good manners | −0.29 |
| Obedience | −0.37 |
| Religious faith | −0.33 |
| Leadership | +0.26 |
| Imagination | +0.39 |
| Responsibility | +0.29 |
| Independence | +0.51 |
| **Political values** | |
| Respect for authority | −0.40 |
| Would never participate in wildcat strike | −0.34 |
| Very proud of own nationality | −0.41 |
| Confidence in: | |
| Police | −0.41 |
| Armed forces | −0.44 |
| Civil service | −0.22 |
| Major companies | −0.22 |
| Leftist self rating | +0.39 |
| Identify with Europe/world | +0.19 |
| Advocate no exclusive control of means of production | +0.29 |
| **Marital and family values** | |
| Faithfulness important | −0.34 |
| Parents should sacrifice for their children | −0.28 |
| Family size preference for ≥3 children | −0.24 |
| Marriage outdated institution | +0.32 |
| Enjoy complete sexual freedom | +0.36 |
| Approval of unmarried mothers | +0.40 |
| End of love as grounds for divorce | +0.21 |

Source: Adapted from R. Lesthaeghe and J. Surkyn, 1988, op. cit. (see reference 23), Table 5.

Such change is not a simple linear process. Lesthaeghe and Surkyn note a short-term move back toward traditional values in times of rising prices in Western European countries, a period effect that all birth cohorts responded to.* It may be that there was a significant link in the United States between rising prices in the inflationary period of the late 1970s and early 1980s and conservative attempts to reverse the trend toward liberalized access to abortion. On an individual level, an analogous reaction can be seen following personal setbacks in life, as in the religious conversions reported by some of the prominent political figures who had been involved in the Watergate scandal.

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*Among the most interesting findings in the Lesthaeghe and Surkyn analysis of the European data was a very strong cohort effect in many domains of social life. Over the years of repeat measures between 1970 and 1986, each younger cohort showed a greater tendency to report individualized values and retained their positions relative to other birth cohorts over the 16-year period. The implication is that such values are acquired at quite young ages and remain relatively stable thereafter. Where there were fluctuations, all birth cohorts responded in a similar way to the same stimuli.

Some suggestions that this larger theoretical and political framework contributes to an understanding of the abortion controversy in the United States can be seen in a few studies of abortion activists. Stephen Markson traced the polarization between prochoice and right-to-life advocates to cultural conflicts in the 1960s over lifestyles, authority, and demands for equal rights.[26] Kristin Luker's study of antiabortion activists in California also used a larger interpretive framework by depicting their world views as rooted in traditional family values and fundamentalist or traditional religious beliefs associated with rural and small-town America.[27]

Based partially on his study of antiabortion activists in Missouri, Donald Granberg also linked abortion attitudes to a wider range of beliefs.[28] He reported that prochoice activists hold to a consistent set of civil libertarian views across a wide array of issues but antiabortion activists subscribe to a much less consistent array of beliefs. Granberg assumed that a consistent commitment to the preservation and protection of human life would require opposition to military expansion, increased resources devoted to health and child care, strict gun control and traditional family values. But while antiabortion activists favor large families and disapprove of suicide and euthanasia, they oppose gun control and favor capital punishment and a large military budget. Granberg's findings fit the profile of orientation toward institutional regulation much better than they do his own preservation-of-life theme.

One other piece of research by Granberg provides a more direct link to the Lesthaeghe-Surkyn theoretical framework,[29] because he used the same measure adopted in the EVS—the Rokeach terminal values measure.[30] This method involves asking respondents to rank 18 values on a scale from one (most important) to 18 (least important). The greatest rank-order difference Granberg found was on salvation, ranked 3.2 by right-to-life advocates and 15.2 by prochoice advocates. Other values antiabortion advocates ranked high were family security, national security, and inner harmony. Values the prochoice advocates ranked high were equality, accomplishment, pleasure, freedom, an exciting life, and a comfortable life. Across the two profiles, one can sense the predominance among the prochoice activists of a secular, highly individualized orientation and among the right-to-life advocates, the predominance of the traditional orientation that gives primacy to family rights and communal obligations over individual rights.

To see linkages of this sort between American research on abortion activists and the European-derived theoretical framework of long-term historical change lends support to our reliance on that research for interpreting and predicting the future course of events and direction of normative change in American society. Research that focuses on short-term, recent and very narrowly defined topics can too readily lead to predictions of abrupt, significant and long-lasting reversals of the direction of social change. There may well be another resurgence of traditional, conservative claims in opposition to abortion or to women's rights or to environmental protection in the years ahead, but there is some comfort in a theory that predicts an ongoing development in Western societies toward a humane, pluralist and tolerant system of beliefs predicated on the ability of individuals to make mature and responsible decisions in the absence of coercive social control.

## Abortion in the Future

At the peak of a highly polarized political debate, both sides in the controversy tend to exaggerate the differences between themselves and to claim that their opponents hold far more extreme views than they do. A few prochoice advocates do in fact consider a month-old fetus to be simply protoplasm or body tissue, but most advocates for abortion law reform assume an abortion is an unhappy and stressful solution to a complex problem, not something done with a light heart and no regrets. Even born-again Christians and deeply religious Catholics have had abortions,[31] and one assumes they do not view themselves as irresponsible or murderous adults.

Here, too, research results can contribute to modifying extreme positions by providing the public and policymakers with factual information relevant to the issues involved in a controversy. Positions taken by antiabortion advocates may soften as it becomes more widely known that many born-again Christians and practicing Catholics have had abortions, that the public assumes abortion will continue to be legal (74 percent), that few believe it will be outlawed (seven percent), and that almost as many people who call themselves conservatives as those who identify themselves as liberals hold the view that legal abortion is here to stay (72 percent compared with 75 percent).[32] The recent failure of the antiabortion movement to defeat prochoice candidates in elections may also have the effect of encouraging some broadening from the extremely narrow circumstances that antiabortion advocates concede as justification for a legal abortion.

A comparable softening of views may also take place among prochoice advocates, as the internal feminist debate on the issue of abortion continues and as results of research on women who have actually had abortions become more widely known. The most extreme prochoice position has been that a woman has a right to an abortion for any reason important to her, without regard to the views of others such as parents or a spouse. Some feminists have begun to argue that an abortion is not the exclusive concern of an individual woman but of the man and the families of both partners as well. Theodora Ooms and Jean Elshstain have pointed out the inconsistency of feminist demands when they push hard to have men included in the birth process and in child care while denying men the right to be involved in the abortion decision.[33] Ooms claims, furthermore, that to press for women's autonomy over the abortion decision encourages the very male disengagement and irresponsibility that women have deplored.

There is also a considerable mismatch between the language of rights espoused by feminist advocates of the prochoice position and the language used by women who have personally confronted the abortion decision. In Carol Gilligan's intensive interviews with women who confronted this decision, there is little evidence of concern for rights, justice or fairness.[34] Their discussions of the circumstances they faced and the painful decisions they made project a very different quality: The women viewed their problem as centered on concern for conflicting responsibilities rather than on competing rights. The finding of Torres and Forrest that the major cluster of reasons women gave for having an abortion concerned conflicting responsibilities between family and school or work is particularly persuasive evidence on this point, because their data come not from a small purposive sample, as Gilligan's did, but from a large survey of 1,900 women who had abortions in 1987.[35]

This is also a point that takes on new relevance when viewed within the framework of long-term changes in developed societies. Women in Western democracies are fulfilling an increasingly important role as breadwinners in their families. It is almost taken for granted that young adult women, if unmarried, will support themselves, and if married, will remain in the labor force on a steady basis throughout adulthood, with only brief withdrawals surrounding one or two pregnancies. The long-range trends toward older ages at marriage, low fertility, and greatly expanded longevity set the stage for such continuous employment of women.

Contributing to the high level and stability of women's presence in the labor force is increased competition in the international marketplace, which depresses wage levels in the United States and the advanced European economies. Women remain employed for a substantial portion of their reproductive years, not because they are engaged in a selfish pursuit of self-fulfillment, but as a matter of necessity. In the 1980s, it takes two breadwinners in most families to maintain a standard of living equal to what one breadwinner could provide in the 1950s. In just the area of housing, the proportion of a monthly income that goes to mortgage payments has tripled during the last 30 or so years: In the 1950s, a 30-year-old man would have devoted 14 percent of his monthly income to pay for a home; by 1973, it was 21 percent; and in 1984, 44 percent.[36] The only way a family can afford such an outlay is by increasing income through the wife's employment.

These changes mean that a far greater cost is involved for the woman, her family, and her employer if she has an accidental pregnancy. More so than in the past, the decision will be to have an abortion rather than to carry the pregnancy to term. Young women are increasingly aware that to drop out of high school or college threatens their future economic well-being, and older women understand that dropping out of the labor force for a second or third pregnancy may threaten their family's standard of living. Little wonder, then, that Torres and Forrest report that a major specific reason women give for having an abortion, one that is reported by women of all ages, is that they simply cannot afford a child. Although that is clearly a relative assessment based on the standard of living a family wishes to maintain, the ability to provide well for one or two children under the circumstances we have discussed could easily be threatened by a third pregnancy, just as a first pregnancy could threaten a college student's ability to become economically self-sufficient. That increasing numbers of young women accept such self-sufficiency and anticipate carrying continuous economic responsibility is suggested by the frequency with which young women reported in the Torres-Forrest survey that they were having an abortion because they were not yet ready for the responsibility of rearing a child.

Behavior can pave the way for ideological change, just as ideology can serve as a motivator for changed behavior. To some degree we may be indulging in wishful thinking, but we think it inevitable that women in the future will be spared the "catch-22" situation so many have experienced in the past—blamed in some sectors of society if they have an abortion and blamed in other sectors if they bear a child they cannot support without public welfare or help from kin. This must surely change as it becomes more widely known and accepted that the majority of women who have abortions do so for mature reasons based on careful self-assessment of their economic ability to support themselves and their children and of their psychological readiness to take on the responsibility of rearing a healthy, cared-for child.

There remains, of course, an ongoing problem where unmarried adolescent women are concerned. Early abortion reformers had in mind older women already rearing a number of children, women who were neither financially nor emotionally prepared to cope with another pregnancy and birth. Early providers of family planning shared the optimistic confidence of the abortion reformers that abortion would serve as a backup in the event of contraceptive failure and would be needed only until sexually active adults made consistent, invariant use of effective methods. That optimism dimmed as the annual number of abortions rose steadily between 1973 and 1981, then stabilized at 1.5 million between 1982 and 1985—representing an abortion rate of 28 per 1,000 women aged 15–44. This meant that three percent of women of childbearing age were having abortions annually, and 30 percent of pregnancies not ending in miscarriage or stillbirth were ending in abortion.[37]

Few early abortion reformers had in mind sexually active teenagers, but the drop in the age of sexual initiation and the continuing high proportion of teenagers who do not use a contraceptive or who use one erratically or ineffectively have combined to keep the number and rate of abortions high. Despite greater exposure to sex education, the belief persists among sexually active teenagers that the probabilities simply do not apply to them and that birth control may in fact be harmful.[38] In addition, evidence indicates that parents continue to feel relatively powerless to control adolescent sexual behavior, even when they wish to do so. The 1985 Harris poll, for example, showed that 64 percent of parents felt they had "not too much" control or "no control at all" over their teenagers' sexual activity; only a third felt they even had "some" control.[39] Parents in the Harris survey were receptive to other institutions' filling the gap they themselves did not think they could fill: The majority approved of sex education in the schools, and two-thirds thought more open discussion of sex in the media would lead to fewer teenage pregnancies. Surprisingly, 80 percent of respondents thought TV should present messages about birth control in its programming; even 67 percent of born-again Christians took this view. Apparently, the belief that sex education should be left in the hands of parents receives little support from parents themselves. Regardless, there is reason to predict that the societal trend toward early sexual initiation and sexual activity over a span of years before any commitment to marriage develops will contribute to a continuing need for access to abortion.

This trend coincides with a dimming of optimistic expectations for new and improved contraceptives. As recently as 1986, sources in the family planning field described scientific breakthroughs that suggested that better, even radically different, contraceptive methods lay ahead: Implants, pregnancy vaccines, reversible sterilization methods and male contraceptives were thought to be on the horizon.[40] But just two years later, the outlook is quite different; the drying up of research and development funds, increasing litigation, concerns for product safety, and complex Food and Drug Administration regulations have combined to nip new developments in the bud.[41] Fewer pharmaceutical firms are engaging in any significant scale of research and development; prices are being raised on new contraceptives to provide a fund to cover anticipated product-safety suits; and firms are avoiding research on postovulatory methods out of fear that their other products may be subject to boycott campaigns waged by antiabortion advocates. In light of these dim prospects for innovative technological advances in the near future, the failure rates associated with currently available contraceptives will perpetuate the need for abortion.

A new set of dilemmas bearing on abortion may also confront an increasing number of adults in the future, as a consequence of advances in medical capabilities. A wide array of techniques are now available for identifying fetal defects in early pregnancy, including amniocentesis, fetoscopy and ultrasound.[42] To abort a defective fetus and try for a future healthy pregnancy may spare a young couple a lifetime of personal anguish and great financial strain, but it can also trigger highly articulate opposition from antiabortion activists as well as advocates for the handicapped. As the range of genetic defects that can be detected in utero enlarges, more borderline cases will develop in which the choice between carrying the pregnancy to term and having an abortion will be a difficult one for a couple to make. An additional contribution to the number of abortion decisions is the age of the woman: More first births are being postponed until the woman reaches her early- to mid-30s, an age carrying an increased risk of a diagnosis of fetal defect.

Developments in a new branch of obstetrics and pediatrics—neonatology—also pose new dilemmas for couples and society. One reads of heroic efforts and a rising success rate in keeping premature babies that weigh 1.0–1.5 pounds at birth alive to the point of hospital discharge. One Australian study reports that 40 percent of such low-birth-weight babies survived to hospital discharge.[43] Even though a British study of 357 babies with very low birth weights found that at follow-up only 27 percent were developmentally normal, 11 percent had physical handicaps and 62 percent had died,[44] the knowledge that younger and younger fetuses can survive outside the mother's body will add to the arguments of those who oppose abortion. Such medical advances may even reduce public acceptance of fetal defect as a circumstance warranting abortion. It is important, therefore, to ensure widespread public knowledge not merely of survival rates of very premature babies but of the high probability of infant death, severe handicaps, extraordinary financial strain, high family stress, and divorce.[45]

A totally new set of issues relevant to abortion is posed by the unprecedented situation we may confront as a society in dealing with the AIDS epidemic. Estimates of the number of persons infected with the virus that causes AIDS and of the proportion of virus-infected persons who will develop AIDS have gone up each year since the disease was identified as a distinct clinical syndrome in 1981. By 1987, the Surgeon General estimated that a total of 1.5 million Americans were already infected with the virus. More disturbing yet is the June 1988 prediction by the Centers for Disease Control that 99 percent of infected persons will come down with the disease.[46]

Asymptomatic adults who carry the virus without knowing it not only are at risk of the disease themselves, but put others with whom they have sexual contact at risk as well. High on the list of recommendations from the report by the Watkins Presidential Commission on the Human Immunodeficiency Virus Epidemic is public education about the desirability of prophylactic protection through the use of condoms. This follows a family planning policy over the past two decades of persuading Americans to change their contraceptive practice from condoms and diaphragms to the more effective steroid pills. Persuading the current generation of sexually active adults to change their contraceptive methods yet again will be no easy task. Nonetheless, one study reports a marked increase in the proportion of young adults who approve of condoms: From a fairly stable approval rate between 1977 and 1984 of about 40 percent, approval of condoms rose to 60 percent by 1987.[47] Actual use of the condom lags considerably behind the approval rate, but use has increased, significantly so among unmarried women (from nine percent to 16 percent between 1982 and 1987 among unmarried women, but from 14 percent to just 15 percent among married women).

These data provide an important anchor point for tracing changes in public attitudes and contraceptive behavior in the years ahead, as public education campaigns increase awareness of and knowledge about AIDS and urge the necessity of both contraceptive and prophylactic protection. In our reading, it is still an open question whether the anxieties created by the fear of AIDS will be strong enough to reverse the course of the long-term trend in Western societies toward greater sexual freedom and experimentation and replace it with a return to the safety of fewer relationships and monogamous marriages. What we can predict with some confidence, however, is this: To the extent that there is a change in contraceptive practice to more widespread use of the condom, the greater will be the importance of access to abortion to handle the inevitable rise in accidental pregnancies that will accompany such a change.

In sum, we believe the long-term trend is toward slowly increasing public acceptance of abortion as an unfortunate, but necessary, solution to unplanned pregnancy among women who, with their partners, face an increasingly varied combination of life circumstances.

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*(Continued on page 301)*

# Family Planning Clinics—A Story of Growth and Conflict

*By Joy G. Dryfoos*

## Summary

During the 1960s, as demand for effective contraceptives increased and women expressed a desire for smaller families, an "odd lot" of groups came together to press for federally supported family planning services for low-income women. The drive culminated in 1970 with the passage of Title X of the Public Health Service Act, which authorized the funds that fed a network of family planning clinics. At the height of the national family planning program, approximately 2,500 agencies were operating clinics at more than 5,000 sites, providing services annually to almost five million patients. As part of the screening for medical methods of birth control, family planning clinics have provided basic physical examinations and related tests to millions of low-income women and teenagers who might not otherwise have had access to those services. Clinics have also been heavily utilized for pregnancy tests, screening for sexually transmitted diseases (STDs), infertility screening and referral for abortion, adoption and sterilization services.

Other desired achievements have been more elusive and difficult to document—reductions in the number of high-risk and unintended pregnancies and in poverty rates, for example. The program's role in providing contraceptive services to teenagers and its involvement in the abortion controversy have led to a number of political, legislative and judicial skirmishes with conservatives, Congress and the Reagan administration. Funding for Title X declined during the 1980s and is now surpassed by Medicaid as the largest source of family planning dollars.

Diminishing funds at a time when some expenses—for supplies, malpractice insurance and treatment of STDs, for example—are increasing have resulted in fewer clinic sites and other service cutbacks. The suggestion has been made that it is time to eliminate categorical funds for family planning and integrate all services into the general medical care system. Family planning providers say an integrated arrangement would not meet the needs of much of their patient population and would not provide the special attention they feel is needed for successful contraceptive practice among low-income, high-risk women. Instead, they suggest expanding the scope of services in family planning clinics, out of an awareness that the continuing high prevalence of unintended childbearing, among the young and disadvantaged in particular, is part of a larger problem of living in a desolate social environment.

**Over the years, family planning advocates have acquired the ability to survive in an atmosphere of controversy. Now, more than ever, they must assert their leadership in articulating the demand for desperately needed services.**

## Introduction

The first birth control clinic in the United States opened its doors in 1916 in New York City; it was shut down 10 days later by local authorities as a violation of obscenity laws. Beginning in 1918, court decisions and administrative rulings gradually made it possible for physicians—and eventually other personnel—to disseminate information on and provide methods of birth control. By 1923, the legal situation had evolved sufficiently so that committed Planned Parenthood volunteers had launched privately funded family planning clinics in more than 100 communities.[1]

During the 1930s, a few state health departments in the South began to allow public health nurses to discuss family planning with their patients. Public hospitals started prescribing contraceptives, however, only after a prolonged conflict that ended in 1958.[2] The changes that slowly took place were the result of individual endeavors by dauntless physicians, social workers and other activists; they did not reflect national policy nor were they accomplished with federal funds.

The 1960s were a time of change and turmoil, and it was during this decade that the struggle to legitimate family planning with supportive public policies finally succeeded. The passage in 1970 of the Family Planning Services and Population Research Act is generally regarded as a major turning point for family planning. Popularly referred to as Title X, because it is Title X of the Public Health Service Act, the legislation authorized the funds to establish a network of clinics that informally came to be known as the national family planning program.

## Passage of Title X

During the 1960s, with the availability of the birth control pill and more overt expressions by women of a desire for fewer children, the demand for effective contraceptives increased. Social research documented that although low-income women wanted the same number of children as higher-income women, they were less successful at achieving their fertility goals because they lacked access to modern

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methods of family planning.[3] Physicians were then (as they are now) the main source for medically prescribed contraceptives,[4] but many poor families did not have private doctors. Affiliates of the Planned Parenthood Federation of America (PPFA) and some public health agencies and hospitals were willing to expand their services, but they did not have the resources to provide birth control services to women who had little or no money.

The major strategy for making family planning available to low-income women was to develop federally supported services. The groups that came together to work for this goal were an odd lot. A strong thrust came from the poverty front, advocates who considered unintended fertility to be one of the major problems confronting poor families. Other supporters were concerned about the growing welfare caseload and thought that the family planning program would be a cost-effective approach to cutting down on the number of people receiving public assistance.

The campaign to create a domestic family planning program also received heavy support from people worried about population growth in developing countries. They had already convinced Congress in 1963 to appropriate foreign aid for population research and in 1967, for overseas family planning program development. Environmentalists were concerned that unless the nation could achieve zero population growth, the future quality of life in the United States would deteriorate as people consumed more and more of a finite supply of natural resources; they, too, joined the fight for universal access to contraceptives.

The women's movement gave impetus to the goals of the campaign; particularly active were groups that had charged the medical establishment with insensitivity to women's needs and had founded clinics to provide their own feminist health services. Counterculture groups that were established to help street people deal with the consequences of sex and drugs were also proponents of subsidized care and reproductive health rights.

Not everyone in the United States supported these concepts; some public health agency personnel remained neutral, preferring to sit out what they perceived as a battle among fringe groups.[5] The diverse groups that did come together did not do so spontaneously. Leadership for developing a broad-scale national family planning program centered on PPFA, which worked in close collaboration with congressional leaders. In opposition were some PPFA supporters who were concerned that involving public funds and public agencies in the delivery of family planning would lead to federal control. As would be expected, the Catholic Church was opposed in principle to the use of public funds for birth control. However, by 1970, the level of contraceptive use by Catholic women was close to converging with that of non-Catholics.[6]

The groundwork for the passage of family planning legislation was laid out during the Johnson administration's war on poverty. The Office of Economic Opportunity, the federal agency empowered to develop community-based poverty prevention programs, verified the demand for and the acceptability of family planning at the local level after it made the first federal project grant for family planning in 1964. Consequently, one strategy for funding services was to incorporate into emerging federal health and social initiatives a requirement that monies be made available for family planning. In this way, three other sources of public funds became accessible to providers of family planning services: the Maternal and Child Health Program, Medicaid and grants to states for support of social services. However, these programs were largely state-controlled, and each state set different policies, eligibility criteria and reimbursement rates. None of the programs were adequate to serve all the women who were estimated to want services and need subsidization to obtain them.

Congress saw no need to formulate a domestic population policy, and ultimately used a health rationale to justify public support for family planning: Family planning had the potential to reduce unwanted births and decrease high-risk pregnancies that resulted in prematurity, mental retardation, congenital defects and infant mortality. Thus, in late 1970, during the first Nixon administration, Title X was passed in Congress by an overwhelming majority. The act called for comprehensive family planning services, readily available to all persons who wanted them. Three major functions were delineated: the organization of a delivery system under the auspices of the Public Health Service; the conduct of research (biomedical, technological, behavioral and program-related) through the National Institutes of Health; and the coordination of services, research and policy through an Office of Population Affairs. The new office was to be at a high enough level in the federal bureaucracy to be staffed by a political appointee rather than a civil servant (a situation that years later would work more to the advantage of opponents of the program than it did that of proponents).

Title X was designed as a categorical effort; that is, the dollars appropriated were to go directly to public agencies or private nonprofit community groups in the form of project grants to provide specific services—in this case, birth control services for low-income women. However, agencies that provided general health services, such as hospitals, health departments and community health centers, were also eligible for the receipt of grants, as long as they could verify that they were willing to provide contraceptives to low-income families in keeping with prescribed medical and counseling protocols. The prevailing organizing principle was to ensure that services would be located within the reach of the target population, a goal that could be accomplished largely by convincing existing health agencies to add family planning to their roster of services.

### Program Growth

In 1969, some hospitals and health departments as well as PPFA affiliates, community health centers and community-based poverty programs already offered birth control services. As new funds became available, these agencies expanded and upgraded their family planning services and new services were initiated by other agencies, such as women's clinics, free clinics, newly formed community-based organizations and adolescent health centers. In 1983, when the most recent inventory of the national family planning program was conducted, there were 2,462 provider agencies operating clinics at 5,174 sites.[7] According to various state reports, the number of clinics has decreased in recent years because of budget cuts.[8] Hospital involvement has diminished markedly over the years, and only 11 percent of all family planning clinic patients in 1983 were served by hospitals. In contrast, about 40 percent were served by health departments, 28 percent by PPFA affiliates and 21 percent by a variety of other agencies.[9]

There were almost five million family planning clinic patients in 1983. As Table 1 (page 284) shows, this represents a fourfold increase since 1969. Most of the growth took place in the first decade of the program, with only small annual increments since 1980. In addition, the characteristics of the patient population have changed since the program's inception. In 1969, the majority of clinic patients were black; by 1983, almost seven out of 10 patients were white. Teenagers made up

**Table 1. Number (in 000s) and percentage of family planning clinic patients, by various characteristics, 1969–1983**

| Characteristic | 1969 (N= 1,207) | 1973 (N= 3,089) | 1980 (N= 4,644) | 1983 (N= 4,966) |
|---|---|---|---|---|
| <150% of poverty | na | 72 | 81 | 83 |
| AFDC recipient | na | 17 | 14 | 13 |
| Race | | | | |
| White | 39 | 62 | 71 | 69 |
| Black | 59 | 34 | 26 | 26 |
| Other | 2 | 4 | 3 | 5 |
| Age <20 | 20 | 28 | 33 | 32 |

Source: **1969**—The Alan Guttmacher Institute (AGI), *Current Functioning and Future Priorities in Family Planning Service Delivery*, New York, December 1982. **1973–1983**—AGI, *Organized Family Planning Services in the United States, 1981–1983*, New York, December 1984.

about one-third of the 1983 caseload, a significant increase over the earlier years, when only one patient in five was an adolescent. The proportion of clinic users who are poor increased also; 83 percent of the patients in 1983 were reported as having incomes below 150 percent of the federally established poverty standard, compared with 72 percent 10 years earlier.* The proportion on public assistance has consistently been small—only 13 percent in 1983. Since most family planning clinic patients are childless, they are ineligible for Aid to Families with Dependent Children (AFDC), the nation's primary public assistance program.

Since the outset of the national family planning program, more than two-thirds of all clinic patients have selected the pill as their method of contraception.[10] Consequently, because they are required to as a prerequisite for obtaining medical methods, millions of low-income women have undergone basic physical examinations, including screening for high blood pressure, cervical and breast cancer, sexually transmitted diseases (STDs) and other infections. In addition, family planning clinics have been heavily utilized for pregnancy tests and related prenatal counseling; adoption, abortion and sterilization referrals; and infertility screening. A few clinics perform abortions (with private, state or local funds) and sterilizations. In fact, the major accomplishment of the family planning clinic system may be its capacity to provide millions of low-income women and teenagers with medical services and counseling. Family planning clinic practitioners believe that they have strengthened the capacities of their patients to plan their futures and make more rational decisions about their sexual conduct.

Research documenting the impact of the use of family planning clinics on such hoped for outcomes as a reduction in the number of high-risk and unintended pregnancies and in poverty rates is somewhat more elusive than the utilization statistics. While it is possible to document changes in various indicators, it is difficult to attribute the changes specifically to the effects of family planning clinic services as distinct from other influences. However, the infant mortality rate in the United States has decreased significantly since 1971—from 19 deaths per 1,000 live births to 11 per 1,000 in 1985. Citing these figures, the Institute of Medicine recently issued a report stating that "the reduction in infant mortality in the U.S. over the past 20 years is due in part to effective family planning. . . . Family planning services as well as abortion and sterilization have decreased childbearing among women with high-risk characteristics. . . . The Committee concludes that family planning services should be an integral part of overall strategies to reduce the incidence of low birth weight in infants."[11]

Between 1965 and 1982, marital birthrates declined markedly,[12] and a significant decrease occurred in the proportion of births that currently married women reported as unintended.[13] A number of researchers have attempted to determine whether higher family planning program enrollment rates in local areas are associated with lower fertility rates, using a statistical process known as multivariate areal analysis. The most recently published work, controlling for a large number of independent variables including prior fertility rates, reaches the conclusion that programs have influenced fertility, with statistically significant results for all women and for whites. (Because the size of the black population is limited in many areas, the effects in that population are more difficult to prove.) The strongest predictor of program enrollment in this model was the number of clinic sites. The researchers conclude that "further reductions in unplanned fertility, and by inference, unplanned pregnancy, would be possible if more family planning clinics were established."[14]

It is difficult to untangle the effects of social and economic conditions on low-income families from the effects of access to fertility control. Both poverty rates and fertility rates dropped markedly in the early 1970s. The fertility rates among black women have shown the most consistent and significant decline;[15] since black women were more than twice as likely as white women to report family planning clinic visits in 1982,[16] it is not unreasonable to claim that their use of the program has had some effect. But poverty rates for women in their childbearing years are higher now than they were in 1971 (14.5 percent and 11.5 percent, respectively), and there are more poor women now than there were then.[17] Thus, while fertility rates have declined for both poor and nonpoor women, the number of children being born into poverty is higher than ever. Therefore, while the national family planning program may have had an impact on the fertility rates of women in poverty, it is less clear as to whether it has affected poverty rates.

## Program Constraints

For the first two years after passage of Title X, funds for the national family planning program were administered by a specialized federal family planning agency. Then came the first of several administrative transformations in the massive Washington bureaucracy that were to affect the relatively tiny family planning program. In the sweeping changes that accompanied the 1972 Nixon landslide, family planning, along with many other social programs, lost its priority and was placed in a new bureau along with maternal and child health programs and community health centers. Over the years, the responsibility for the family planning program has continued to shift, and most recently, under the Reagan administration, it was relocated to the Office of the Assistant Secretary for Health. There the program has been placed under the management of three successive right-to-life advocates, and since 1980, family planning providers have been subjected to restrictive regulations, exhaustive audits, delays in receiving grants and other forms of harassment.[18]

A major skirmish occurred in 1983 over the "squeal rule," an administration-inspired regulation that would have required clinics supported with Title X funds to notify parents by registered mail if their teenagers requested and were provided with contraceptives.[19] The courts eventually ruled that the regulation was invalid, saying it violated the intent of Congress. Another regulation that caused much alarm among family planning providers and that the courts also voided as illegal and unconstitutional was the "gag rule."[20]

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*Based on the 1987 poverty index, 150 percent of the poverty level would equal $16,800 for a family of four. A teenager's income status is determined by her own income rather than her family's.

It was promulgated in 1987 to create a "wall of separation" between family planning and abortion and to prevent family planning clinics from mentioning abortion in their counseling and from providing referrals for abortions.*

The family planning program's provision of services to unmarried teenagers and its involvement in the abortion controversy have moved the program, once quite popular among members of Congress, into a more skeptical legislative atmosphere. In addition to conservative congressmen who feel that getting the government out of the bedroom would help preserve the American family, there are some legislators who think family planning would be less visible and less bothersome if it were integrated with other programs—for example, if it were folded into maternal and child health services or community health centers. Some health officials are also concerned with the inefficiencies of managing hundreds of small projects.[21]

Despite all the controversy and the lukewarm support from inside the federal government, Congress renewed Title X six times. However, since 1984, the program has been preserved through continuing appropriations resolutions, a legislative process that extends the program as is. While this strategy avoids crippling amendments and ensures that there will be an annual appropriation, it also prevents changes that would make the legislation more responsive to current needs or would increase the funding. As with most new programs, proponents had expected that funds for family planning would increase each year to expand the caseload and meet the demand for services. Table 2 shows the trends in public expenditures for family planning from Title X and the other federally supported funding mechanisms—Medicaid, the Maternal and Child Health Program and social services.† In the early years, Title X expenditures grew rapidly; they then hit a plateau at around $100 million in 1975. In 1980 and 1981, renewed congressional enthusiasm for a program that appeared to be cost-effective resulted in significant increases, for a program total of more than $150 million. The new momentum was stopped in its tracks by Reagan budget cuts, and expenditures dropped dramatically, to $118 million. In 1985, expenditures rose to $133 million and dipped to $131 million in 1987. When yearly amounts are translated into constant dollars, funding for Title X fell by more than one-third between 1980 and 1987.[22]

**Table 2. Federal expenditures (in millions) for family planning services, 1968–1987**

| Fiscal year | Total | Title X | Other |
|---|---|---|---|
| 1968 | $ 13 | $ na | $ 13 |
| 1969 | 34 | na | 34 |
| 1970 | 56 | na | 56 |
| 1971 | 65 | na | 65 |
| 1972 | 115 | 39 | 76 |
| 1973 | 162 | 89 | 73 |
| 1974 | 176 | 103 | 73 |
| 1975 | 198 | 112 | 86 |
| 1976 | 202 | 90 | 112 |
| 1977 | 215 | 106 | 109 |
| 1978 | 239 | 130 | 109 |
| 1979 | 257 | 127 | 130 |
| 1980 | 299 | 153 | 146 |
| 1981 | 325 | 152 | 173 |
| 1982 | 275 | 118 | 157 |
| 1983 | 282 | 117 | 165 |
| 1984 | u | u | u |
| 1985 | 334 | 133 | 201 |
| 1986 | u | u | u |
| 1987 | 336 | 131 | 205 |

Sources: **1968–1977**—A. Torres, "Organized Family Planning Services in the United States, 1966–1977," *Family Planning Perspectives*, **11**:342, 1979; **1978**—D. McFarlane, and J. Glasser, "Impact of Title X Program on State Title X Expenditures for Family Planning," paper presented at annual meeting of American Public Health Association, Montreal, 1982; and **1979–1985**—Reports from B. Nestor and R. Gold on public funding on contraceptive services from annual surveys; **1987**—R. B. Gold and S. Guardado (see reference 22).

**Note**: na = not applicable; u = unavailable; figures prior to 1977 include some expenditures for sterilization services.

It was never expected that family planning services would be entirely supported by Title X, since other sources of funds were also available for that purpose. Title X represented more than half of all federal expenditures for family planning through 1975. As it ceased growing, providers turned increasingly to other sources. In 1987, an estimated $336 million in federal funds was spent on contraceptive services and supplies, and Medicaid—with expenditures of $138 million—exceeded Title X as the largest source of family planning dollars. However, while all Title X funds go for clinic services, about half of Medicaid family planning funds are used to reimburse private physicians who provide contraceptive services to Medicaid recipients. Nationally, Social Services Block Grants provided another $36 million for family planning and state Maternal and Child Health agencies reported expending $31 million for that purpose. In only a few states do these funds go to local providers in significant amounts.

Family planning agencies may receive funds directly from state budgets, as well as from federal sources. In 1987, states reported spending $50 million.[23] More important from an administrative point of view, the federal government has increasingly viewed states as prime actors in the provision of health and social services, and many of the grants that were once provided by Title X to local-level organizations have been consolidated into grants given to and administered by state agencies, usually health departments. The number of Title X grants declined from 300 in 1972 to 83 in 1988,[24] an indication of the changing philosophy about shifting power from federal authorities to states. Diverse agencies from PPFA affiliates to local health departments still provide the services, but the state acts as a conduit for the funds and may add some of its own requirements to those of the federal government. In 39 states, the primary Title X grantee in 1985 was the health (or human service) department; in nine states, it was a statewide or regional family planning council, and in three states, the statewide Planned Parenthood affiliate.[25]

## Unfinished Business

The concept of providing public support for family planning clinics rode into Washington on a brief wave of concern about equalizing social opportunity. Priorities and dollars have since shifted from health and social welfare to defense and other concerns. Budget cuts to reduce the federal deficit are a reality that create great difficulties in getting funding for family planning clinic operations. Diminishing funds have resulted in fewer clinic sites, fewer sessions per site, cutbacks in evening and weekend hours, waits for appointments as long as two months in some localities, elimination of outreach and follow-up, and less attention paid to counseling. Some of the few services that were available to men have reportedly been eliminated, and restrictions have been placed on the number of outpatient sterilizations that can be provided.

One of the important benefits of family planning clinics has been the availability of on-site tests for STDs. In New York State, for example, 44 percent of all STD screenings are performed in family planning clinics.[26] However, these tests, and whatever treatment is required, have been financed largely out of Title X funds. A substantial increase in the incidence of diseases such as chlamydia and the need to respond to the AIDS crisis are rapidly using up scarce resources in some family planning clinics.

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*The Title X law prohibits the use of its funds to perform abortions. However, grant recipients are required to offer options counseling to pregnant patients and to provide referrals if needed.

†Some state funds are included in Medicaid and other federal-state programs.

Costs are also rising dramatically for some supplies and for malpractice insurance, further limiting the program's capabilities to meet growing demands from increasing numbers of the working poor, who are often uninsured and ineligible for Medicaid.

Clinic staff problems appear to be pervasive. Clinic salaries are not competitive with those of other medical facilities, and fewer young people are applying for low-paying, cause-oriented work. The difficulty of recruiting nurse-practitioners is described as a crisis. One agency director lamented, "Everyone seems tired. The Reagan years tired us out, and now we have AIDS, and AIDS seems such a hopeless fight at times. Plus there is not enough money nor is there helpful guidance and leadership from the federal and state government."

Some of the frustration experienced by clinic workers derives from a feeling that there are still many women who have not utilized or been reached by the clinic program. Although close to five million women a year make visits to family planning clinics, there remain a large number of low-income women and teenagers who are at risk of unintended pregnancy. In 1987, approximately eight million low-income women were estimated to be in need of subsidized or organized family planning services.*[28] Estimates made in 1983 indicate that about 44 percent of these women use clinics to obtain contraceptive services,[29] and 21 percent use private physicians,[30] leaving one-third of the target population unserved by medical sources. Some of these approximately three million women undoubtedly use nonmedical methods of contraception. However, many are among the 3.3 million women who each year experience unintended pregnancies that either are terminated by abortion or result in unplanned childbearing.[31]

Early family planning providers had hoped that removing the barriers to contraceptive access would be sufficient to upgrade the practice of fertility control so that poor women could achieve their aspirations for smaller families. Clearly, many barriers still exist that could be eliminated with increased funding and other organizational changes. But many poor women and young women may need more substantial interventions than merely providing access to family planning clinics. The rates of unintended childbearing remain very high among unmarried women, for example; in 1982, 84 percent of first births to unmarried women aged 15–24 were reported to have been unintended.[32] Such factors as failing school systems, the lack of career opportunities for people with few skills, severe drug problems and mounting homelessness and destitution contribute to a woman's perception that once pregnant, her quality of life will not be altered by having a child.[33]

## The Future

Over these tempestuous years, the medical establishment has come to accept family planning as a component of comprehensive health care. This has triggered the suggestion that the time has come to totally integrate family planning services into maternal and child health programs or some other system that serves low-income families.[34] This would mean the elimination of categorical funds for family planning, with the possibility that the monies would be added to more general grants distributed to state health departments.

Conversations with family planning clinic providers indicate that most do not believe that an integrated arrangement would meet the needs of much of their patient population. State programs operate without congressional oversight, an important factor in maintaining uniform standards of care. Consequently, dismantling Title X could result in an inequitable distribution of services. Furthermore, there is a perception among providers that state legislators and administrators may be susceptible to pressure from right-wing groups to further limit family planning programs. Such alternatives as relying on health maintenance organizations to pick up assigned low-income women who are Medicaid-eligible or designating STD clinics as an entry point for birth control provision have also been proposed. None of these arrangements would meet what clinic providers believe are the requirements for successful family planning programs: regularly scheduled clinic sessions; a professional staff with knowledge of current contraceptive technology, sexuality counseling, and the special needs of such high-risk groups as adolescents and immigrants; no eligibility criteria; and a commitment to voluntary and confidential pregnancy prevention services.

The goal of reaching the unserved is not likely to be met, however, without some changes in the current system of delivering family planning services through specialized clinics. As one agency director commented, "We're stuck in a time warp. We haven't changed the way we do things since the early Planned Parenthood clinics." Some of the ideas that have surfaced recently include offering incentives for method compliance (since many patients do not make return visits on schedule to renew their pill prescriptions), making counseling more intensive and salient for patients at high risk of unintended pregnancies and STDs; and arranging for massive distribution of condoms and foam. Increasingly, clinics are offering special programs for teenage parents, for prenatal and postpartum care and for nutrition services. Family planning agencies are providing AIDS testing and referral and gearing up to offer further AIDS counseling. One family planning agency has opened a youth center that provides job-skills training and educational remediation.[35]

The rationale for expanding the scope of services in family planning clinics derives from a growing awareness of the interrelationships between the continuing high prevalence of unintended childbearing and the lack of basic skills, high school–dropout rates, and unemployment.[36] This new awareness is leading to the development of multiple prevention approaches in one location, such as a school or a community-based health or social services center. Despite budget cuts in family planning funding, family planning providers may have opportunities to tap new funding sources to initiate innovative and collaborative programs directed at a range of high-risk behaviors. For example, it may now be feasible to expand clinic services in the areas of child abuse prevention, drug abuse prevention, educational remediation and employment counseling. Family planning providers are also being invited into other agencies to provide the reproductive health care components of comprehensive programs. As these collaborative arrangements develop, however, health workers interested in pregnancy prevention will have to ensure that sufficient attention continues to be given to family planning. The experience to date with school-based clinics shows that only at those sites where staffs are firmly committed to the provision of family planning has there been improved contraceptive use among sexually active students.[37]

A time may come when the United States develops a rational, unfragmented primary health system. In other developed countries, family physicians and family planning clinics are available to poor and rich alike, information and education sources consistently promote the use of a wide range of contraceptive methods and unintended pregnancy rates are low.[38] Even in countries with national health systems, however, specialized family planning clinics are still needed to serve women who are not ready to go to private physicians. In these models, clinics are used primarily to initiate the effective practice of contraception. In any case, the drive in the United States to develop universal national health insurance and a national system of health delivery appears to be deflected by, among other factors, a long-term budget crunch and fears of "socialized" medicine.

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*Included in this estimate are all women who are sexually active, fecund and not intentionally pregnant or trying to become pregnant and who have incomes below 150 percent of the poverty level.

In the meantime, poor women are finding it harder and harder to get appointments at local family planning clinics, adolescents are scared away from clinics by negative publicity and harassment, and private physicians willing to provide free or low-cost service to either type of patient are growing scarce. Increasing numbers of immigrant groups in different parts of the country, faced with both economic disadvantage and language barriers, have no place to turn for help. The rising tide of uninsured near-poor families is producing unprecedented demands for subsidized services. Access to high-quality, low-cost family planning care for women at high risk of unintended pregnancy cannot be assured without the continuation of the categorical Title X legislation. The national family planning program envisioned by the coalition that fought so hard to gain the passage of Title X has never been allowed to reach its potential for assisting low-income families—males as well as females—in acquiring modern methods of fertility control. Providers know what they have to do to reduce the rates of unintended pregnancy, but they cannot achieve success without more support for clinic services, recruitment and training of staff, outreach and follow-up, improvement in contraceptive methods, and intensive promotion of prevention messages.

Prognostications are always hazardous. It would help if the new administration and the new Congress viewed reproductive health care as a right for all people. However, President-elect Bush's campaign rhetoric alluded to requiring parental consent before minors could obtain contraceptives and refocusing Title X on adoption services. His support of the "gag rule" may prolong the controversy over abortion counseling and referral. The opposition will not disappear. The right-to-life movement has marked sex education, family planning programs for adolescents and emerging contraceptive methods for attack.

An essential skill that people in the family planning field have acquired over the years is the ability to survive in an atmosphere of controversy. And now, more than ever, family planning advocates must assert their leadership in articulating the demand for desperately needed services. In the past, solutions were sought at the federal level. In the future, every state must also be held accountable, while pressure for federal support without regressive regulation continues to be maintained. Disadvantaged women will be relying on family planning clinics not only to help them obtain the most effective contraceptive methods but, increasingly, to assist them in coping with the effects of living in a desolate social environment.

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# Birth Control Methods in the United States

*By Malcolm Potts*

## Summary

U.S. women have fewer birth control options than do women in other developed countries. Reliance on sterilization helps many couples make up for their lack of choices, but high rates of sterilization among relatively young women are a cause for concern, given the chance of later regret. Although pill use is very high among young women, it falls dramatically among those in their 30s and, often unnecessarily, is minimal among those over 35. The IUD is most appropriate for older women in mutually monogamous relationships who have completed their families, and its availability has been limited in recent years because of liability problems. Although barrier methods are widely used by women of all ages, they are less effective than the pill or IUD. It is fair to conclude that given U.S. women's sometimes long intervals of exposure to the risk of unintended pregnancy, too few safe and effective reversible contraceptives are available in the United States. The addition of an acceptable new method would certainly lead to a reduction in unintended pregnancies, but many potentially useful new methods will not be developed in this century unless the amount of money invested in contraceptive research and development is substantially increased.

## Introduction

Birth control has had a more bitter history in the United States than in any other industrialized nation. The battle Margaret Sanger began in the first half of the century to make family planning available to all socioeconomic groups did not end until the Supreme Court ruled in 1965 that the constitutional right to privacy includes the right to use contraceptives.[1] Abortion was legalized in some states starting in the late 1960s, and became legal in all states after the 1973 Supreme Court rulings.[2] However, many European nations had passed these same milestones on the road to reproductive choice years or even decades earlier.

In the late 1960s and early 1970s, rapid progress was made in all areas of birth control in the United States. Over the next 15 years, though, everything began to fall apart. Today, U.S. women have fewer birth control choices than women in other industrialized nations, and they must pay more to obtain contraceptives than do women in those countries. Given these facts, it is hardly surprising that American women have higher rates of unintended childbearing and abortion than do women in those industrialized nations. In addition, prospects for either introducing new birth control technologies or fine-tuning the contraceptive distribution system—which is expensive and does not make contraceptives equally accessible to all who are in need—are less bright in the United States than they are in most other developed nations.

This review will examine the family planning methods available to American couples and how couples use these methods to control their fertility. The appropriate perspective here is a long-range one that emphasizes the changing family planning needs of couples as they pass through their reproductive years. Too often, the time horizon for the consumers or providers of family planning is the 28-day menstrual cycle or the timing of the next clinic visit. In reality, we need to look at reproduction as a continuing, lifelong process with long-term ramifications. For example, teenage sexuality is affected by the age of puberty; and the health of the menopausal woman partly reflects the outcome of her childbearing when she was in her teens and 20s.

## Overview

We too easily forget how difficult it is for contemporary women, who start having intercourse earlier in their lives than in the past[3] and experience menarche earlier as well,[4] to have the very small families that they want. The total number of planned births in the United States averages only about 1.25 per woman, and the total fertility rate, including unintended births, is just 1.8 births per woman.[5] The median age at which U.S. women have their last wanted child is 26.9 years, and 75 percent of all women have all the children they want by age 30.[6] Even a contraceptive method with an annual failure rate of one percent that is used from age 30 to age 45 will leave one woman in seven with an unintended pregnancy.[7] The number of women who breastfeed their babies has increased since 1969,[8] but the relatively brief duration of breastfeeding provides only trivial protection against pregnancy. The practice of birth control through the use of modern methods of family planning is essential if U.S. couples are to realize their fertility desires.

The picture of family planning use in the United States is broadly similar to that in other industrialized nations when it is viewed from a distance, but we find a serious lack of contraceptive choice when we take a closer look. This deficiency has important implications for the individual, for families and for public welfare. As we will see, the range of contraceptive choices for U.S. women is narrower than for Europeans or Canadians, who variously enjoy access to postcoital contraceptives, new progestogens, a wider range of IUDs and, in several countries, injectable contraceptives. American women at the extremes of

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their reproductive lives (especially those who are also poor or belong to minorities) suffer particularly in the struggle to control their fertility.[9] Married couples in their years of maximum fertility muddle by reasonably well, but with considerable room for improvement: For example, oral contraceptive use among married 20–29-year-old Dutch women is nearly twice as high as among comparable U.S. women; among women over 35, the level in the Netherlands is nearly 10 times that in the United States. Conversely, U.S. women's total abortion ratio (i.e., the total abortion rate as a percentage of the total pregnancy rate) is almost three times that of Dutch women.[10]

Reliance on voluntary sterilization helps many U.S. couples make up for a lack of contraceptive choices. Surgical sterilization accounts for approximately one-quarter of all contraceptive practice among women 25–34 years of age and for two-fifths among those over 35. One-quarter of men over 35 have had a vasectomy. If present trends continue, three out of four American couples will choose sterilization within 15–20 years of their last wanted birth.[11]

Accessibility to contraceptives is a widespread problem in the United States as well. American women obtain contraceptives from specialized providers (often gynecologists), whereas family practitioners are the overwhelming source of family planning services in most of Europe.[12] The expense of services and supplies is a deterrent in the United States: the cost of an IUD and its insertion is $200 or more. In contrast, in many European countries, family planning services are provided free or for a nominal charge; in several countries, the methods themselves are available at no charge.[13]

Young Americans in particular sometimes find it hard to protect themselves against pregnancy. Although it is unusual for both partners to be virgins at marriage, many Americans remain ambivalent about the provision of contraceptives to the unmarried. Perhaps this is one reason why U.S. women in their teens and early 20s have more unintended pregnancies than do their counterparts in any other comparable industrialized nation, even though patterns of sexual behavior in those countries and in the United States are broadly similar.[14]

It is fair to conclude that given the long intervals of exposure to the risk of unintended pregnancy that U.S. women often face, there is not a wide enough choice of safe, effective and acceptable reversible contraceptive methods available in the United States. Current patterns of contraceptive practice and of exposure to the risk of pregnancy are summarized graphically in Figure 1 (see page 290), which shows the percentage of women in each age-group who—because they are not yet ovulating, because they are fertile but not yet sexually active or because they are past menopause—are unable to become pregnant, who are using a specific method of contraception or who are not using a method. Tracing an upward path across the age-groups on the chart also illustrates the experience of women as they move from, say, using oral contraceptives or barrier methods or engaging in a fair amount of risk-taking early in life to being sterilized later in life. During the course of this article, we will periodically return to Figure 1 to examine how particular contraceptive methods currently fit into U.S. women's lives.

### The Reversible Methods

• *The pill.* Oral contraceptives are the method most commonly used by women in their years of maximal fertility. Pill use begins early; as can be seen in Figure 1, American teenagers, if they use a method at all, rely far more heavily on the pill than on any other contraceptive. Reliance on the pill continues to rise with age, peaking among 20–24-year-olds; pill use is greater in this age-group than is use of any other contraceptive method in any other age-group. However, pill use declines dramatically among women in their 30s, becoming virtually nonexistent among those over 35. As we will see later, the reasons of safety generally cited in support of the rationale that women over 35 should not take the pill are no longer sound.

The pill was the outstanding U.S. contribution to birth control technology, and remains the most innovative step in the history of family planning. It was a therapy without precedent—a drug that could be used by disease-free women for extended periods of time in order to prevent pregnancy. However, it was also a therapy that caused a wide range of systemic changes unrelated to the prevention of pregnancy. Over the past 30 years, we have learned a great deal that is good and some that is bad about the pill, and that knowledge has not always been obtained by the most direct route.

Early U.S. pill research has been criticized as inadequate and even reckless, but such a characterization overlooks both the facts of history and the evolution of drug testing. When Gregory Pincus and John Rock developed the pill in 1957 at the Worcester Foundation for Experimental Biology near Boston, it was illegal to offer contraceptives in Massachusetts, and the inventors were forced to conduct clinical trials in Puerto Rico. At that time, the U.S. Food and Drug Administration (FDA) did not require the testing of new contraceptive drugs in animals—but even if it had, such tests would not have uncovered the cardiovascular risks that were identified as pill use exploded in the 1960s and 1970s.*

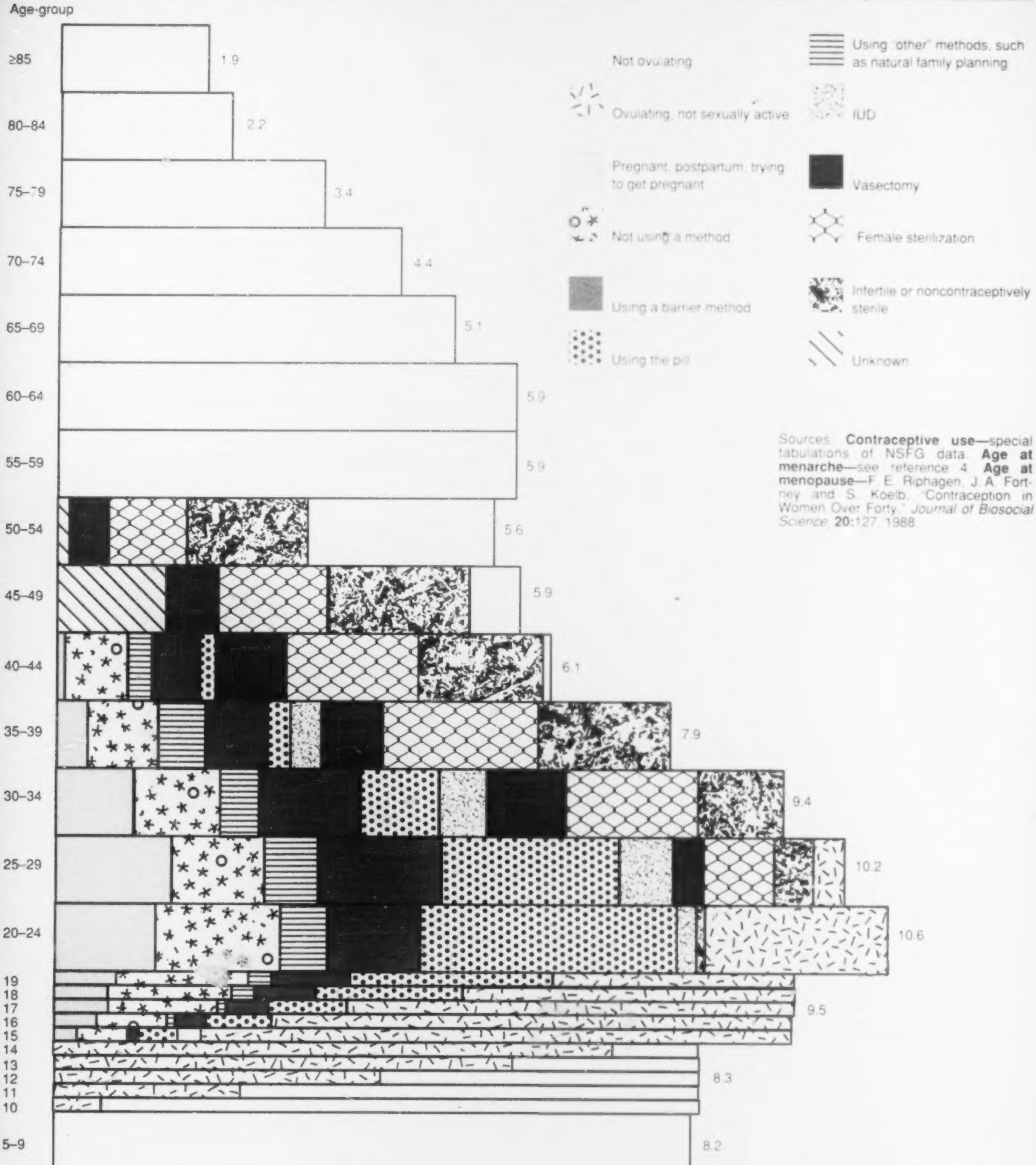
It is essential to remember that reproduction-related differences across species are much wider than those related to, say, blood pressure. For example, beagles react differently to steroids than do women, and the use of the beagle as a test animal is no longer recommended by the World Health Organization (WHO).[15] We share almost 98 percent of our genetic makeup with chimpanzees, and testing a drug on a chimpanzee heart, kidney or eye would probably predict the outcome of use in humans with 98 percent certainty. Even if there were enough chimpanzees for routine testing of steroidal contraceptives, these animals also might not provide an adequate model for testing, for example, the association between pill use and breast cancer, since the female chimpanzee develops breast tissue only during her first pregnancy, not at puberty.[16] Clearly, the response of breast tissue to steroids in the two species will be different.†

There is no escaping the fact that any new systemic contraceptive for humans involves an experiment on our own species, the outcome of which cannot be predicted with certainty in advance of widespread human use. Documentation of a rare but important side effect that might

*When it came to studying the long-term risks and benefits of the first oral contraceptives, Pincus and Rock were more prescient than the FDA and, with colleagues in Puerto Rico, set up a well-controlled study contrasting pill users and barrier users. (See: M. Potts et al., "The Puerto Rico Oral Contraceptive Study: An Evaluation of the Methodology and Results of a Feasibility Study," *British Journal of Family Planning*, 7:99, 1982.) Unfortunately, the study was inadequately funded and slowly fell apart.

†In a few cases, the rigid application of animal tests may have actually prevented the use of safe and effective contraceptives. For example, Depo-Provera, the injectable hormonal contraceptive, was used by tens of thousands of U.S. women in the 1960s, and over 10 million women now use it worldwide, but it has been highly controversial largely because at high doses it produces breast tumors in beagles and endometrial lesions in monkeys (see: L. Liskin, R. Blackburn and R. Ghani, "Injectables and Implants," *Population Reports*, Series K, No. 15, 1987, pp. 69–75). The FDA rejected contraception as an indication for Depo-Provera use in the drug's labeling.

**Figure 1. Number of U.S. women in various groups, by fecundity status and contraceptive use, by age-group, 1982**



Sources: **Contraceptive use**—special tabulations of NSFG data. **Age at menarche**—see reference 4. **Age at menopause**—F. E. Riphagen, J. A. Fortney and S. Koelb, "Contraception in Women Over Forty," *Journal of Biosocial Science*, **20**:127, 1988.

affect one in 1,000 or one in 10,000 users can require tens or hundreds of thousands of woman-years of use of a new drug.[17] However, by the time a multimillion dollar, long-term epidemiological study of a contraceptive drug or device is completed, it may only reveal information about yesterday's contraceptive, not the version in current use.

In the case of the pill, past formulations had one particular drawback: The dose was unnecessarily high. The logical, normal way of developing a new drug is to raise the dose stepwise until the therapeutic goal is reached, but early pill users were deliberately given high doses of steroids, because with abortion still illegal, the medical profession had no legal way of dealing with an accidental pregnancy. Enovid,[*] which was introduced in June 1960, contained as much progestogen in one tablet as a modern formulation contains in a whole month's worth of tablets and had five times as much estrogen as is in contemporary low-dose pills. The advantage of overdosing was that pregnancy was prevented even in women who had forgotten to take their tablets regularly, but overdosing also resulted in important adverse health effects that otherwise could have been avoided.

Both the lay public and medical scientists have failed to see the postmarketing surveillance forest for the premarketing clinical-trial trees. Millions of dollars have been spent—and continue to be spent—on clinical trials required in order to obtain marketing approval from the FDA. Such trials rarely utilize more than 2,500 women for, at most, two years, and they have not provided useful information on long-term risks and benefits. As the WHO Toxicology Panel has pointed out, "Many of the adverse effects of drugs on humans can be discovered only after the drug has been in widespread use."[18] Perhaps the FDA might consider simplifying premarketing research requirements in return for more comprehensive postmarketing surveillance.

To date, however, the resources allocated for adequate long-term surveillance have simply been insufficient. The pharmaceutical industry has never had enough commercial incentive to make the needed long-term commitments to contraceptive development, as patents on new drugs last only 17 years, and it can easily take half of that time just for a drug to pass from the laboratory to the marketplace. The few long-term, prospective studies that have been completed thus far were funded largely by the Medical Research Council (MRC) in the United Kingdom and the U.S. National Institutes of Health (NIH), and the MRC has just announced that it cannot afford to continue support of the well-known and information-rich Royal College of General Practioners' study.[19]

In the 1970s, British and American case-control studies, both prospective and retrospective, demonstrated that pill users were at an increased risk of heart disease, stroke and venous thrombosis. These risks rose with age, were greatly multiplied if the user smoked and were highest among women who used pill formulations containing a daily dose of more than 50 mcg of estrogen.[20] Research suggests, however, that the original estimates of cardiovascular risk were probably overstated, even for high-dose formulations. One study shows that while pill use climbed in the late 1960s and the 1970s, deaths due to cardiovascular disease fell among women aged 15–44.[21] If the putative risks of cardiovascular disease found in the case-control studies did indeed apply to U.S. pill users, cardiovascular deaths among nonusers would have to have declined by over 75 percent to account for the documented decrease.[22]

Recent U.S. data on 65,000 pill users and controls found 11 deaths from cardiovascular diseases among the controls but none among the pill users. Although the study did indicate an increased risk of venous thrombosis among pill users, the risk was lower among users of low-dose formulations.[23] Another researcher has pointed out that pill-related cardiovascular risks appear to result largely from estrogen-induced changes in the blood that predispose users to clot formation, and less from possible progestogen-related arteriosclerotic damage to the walls of blood vessels.[24] Thus, pills containing less than 50 mcg of estrogen, which by 1987 had captured three-quarters of the oral contraceptive market,[25] may carry a lower risk of cardiovascular complications.

In short, the risk of cardiovascular disease among users of contemporary low-dose combined oral contraceptives who have no other risk factors (such as smoking) appears to have been overstated. Unfortunately, just as in *Alice in Wonderland*, where the grin on the Cheshire cat persisted after the animal had disappeared, the scowl on the bureaucrat and the affidavit in the attorney's briefcase seem to remain long after the apparent cardiovascular hazard has disappeared. As a result, most American physicians rigidly apply the 1970s guidelines devised by the FDA for high-dose pills to the current low-dose formulations and severely restrict pill use among women over 35, often altogether forbidding women over 40 from using any form of oral contraceptive.

Our understanding of the pill and cancer depends on fewer than 20 significant postmarketing studies. FDA-mandated clinical trials and animal studies have not provided key information. A number of studies have confirmed that oral contraceptives protect against ovarian and endometrial cancers. The data from several sources are consistent and biologically plausible. Repeated ovulation appears to "wound" the ovarian surface, and pregnancy, lactation and pill use, all of which prevent ovulation, therefore protect against ovarian cancer.[26] As for endometrial cancer, it seems that exposure to natural estrogen unopposed by progesterone in the first half of a normal cycle increases the rate of cell division in the uterine endometrium and therefore the risk of cancer. Conversely, the pill slows the rate of cell division; five years of pill use reduces the risk of endometrial cancer by 40–80 percent, and 10 years of use lowers it by perhaps 65–75 percent.[27]

If analysis of the health impact of oral contraceptive use is limited to the cardiovascular risks and to the prevention of ovarian and uterine cancer, the good and the bad effects virtually cancel each other out.[28] However, the pill's relationship with breast cancer remains the big unknown. The largest study funded by the NIH (the Cancer and Steroid Hormone Study) showed no difference in the risk of breast cancer between pill users and controls.[29] Yet an adverse effect on the risk of breast cancer following a woman's exposure to diethylstilbestrol was only proved 22 years after the first exposures,[30] and it could be argued that users of oral contraceptives have not been subject to a long enough follow-up. It has been suggested that the rate of cell division in breast tissue is slightly raised throughout the 21 days of combined oral contraceptive use,[31] rather than merely during the luteal phase of the cycle, as seems to be the case in the normal cycle.[32] If this is true, pill use might increase the risk of breast cancer overall or in some subgroups of users. Some epidemiological studies have shown a positive relationship between pill use and breast cancer among women who used the combined pill before their first birth or before age 25.[33]

Because none of the studies under way are large enough to provide an unambiguous answer, this key question is likely to remain unresolved for many years to come. The most we can say is that if there is a relationship between breast cancer and oral contraceptive use, it is probably not as marked as the proven reduction in ovarian and uterine cancers associated with its use. However, because breast cancer is so common, even a small increased relative risk would have important implications.

Epidemiological studies of cervical cancer, like those of breast cancer, have given equivocal results.[34] However, cancer of the cervix is correlated with the number of sexual partners a woman or her sexual partner has had, and it is not normally influenced by hormonal patterns. It may result from infection with the human papilloma virus, and one way to look at cervical cancer is as a sexually transmitted disease (STD) with a long latency period. Apparent correlations with pill use may be related to confounding factors, such as more frequent Papanicolaou smears among pill users.[35] Nonetheless, the possibility of an association between pill use and cervical cancer cannot be dismissed out of hand, and further research should shed more light on this question.

• *Intrauterine devices.* It is now well understood that the IUD is most appropriate for older women who are in mutually monogamous relationships and have completed their families. And such clinical judgment is reflected in prevalence levels: As can be seen in Figure 1, there is little IUD use among women under age 25, and most users are concentrated between ages 25 and 40.

In contrast to the evaluation of oral contraceptives, that of IUDs is more scientifically straightforward. Despite controversy surrounding the IUD in the past decade, the device has a genuine place in family planning, largely among married women in mature, sexually stable relationships who are at minimal risk of pelvic infection. Unfortunately, the IUD's history in the United States exemplifies both swings in medical practice and defects in the American legal system. Invented in the 19th century, IUDs were well-known in Europe by the early 20th century; they fell into disrepute in the 1930s, only to blossom again when the first plastic IUDs became available in the 1960s. However, after it was marketed in the early 1970s, the Dalkon Shield, a bad device badly promoted, caused several deaths and numerous cases of serious pelvic infections; the more than 4,000 legal cases against its manufacturer, A.H. Robins, finally brought the company to bankruptcy in 1984. And it appears that the Dalkon Shield catastrophe carried other, better-designed devices down with it: The cost of litigation and relatively small profits led Ortho Pharmaceuticals and G.D. Searle to remove their IUDs from the U.S. market in 1986. In September 1988, a jury awarded $8.75 million in damages against Searle for an infection associated with its Copper-7 IUD.[36]

Sadly, the removal of the IUD from the U.S. market occurred at the very moment when prescribing patterns were being refined to improve safety. The most serious risk of IUD use—pelvic inflammatory disease—is closely correlated with exposure to STDs and is minimal in women who are in mutually monogamous relationships. Just as oral contraceptives should not be used by women at risk of cardiovascular disease, IUDs should not be used by women at risk of STD.[37]

Among appropriately selected and informed users, the use of the copper IUD is associated with pregnancy rates as low as 0.5–1.0 per 100 users per year, as well as excellent continuation rates.[38] However, until Gynopharma, a small independent pharmaceutical company marketed the TCu 380A in 1988, the only IUD that had remained on the U.S. market following the withdrawal of the Searle and Ortho IUDs was the Progestasert, a hormonal IUD with an effective lifetime of one year. The Multiload, an effective copper IUD used widely in Europe, has never been approved for sale in the United States.

Having only limited access to IUDs is particularly bad for older women, in general, and for monogamous women who need to limit or space their pregnancies; in European countries, such women are far more likely to rely on the IUD than are U.S. women. For example, 23 percent of French women over 40 use IUDs, compared with only six percent of such women in the United States.[39] IUD insertion immediately after delivery or induced abortion is a convenient option for the user and the service provider (although expulsion is more likely than after interval insertion[40]), but this approach has never been offered on a substantial scale in the United States. Women who are breastfeeding tolerate IUDs well and experience less insertion-related pain, but there is evidence of a higher perforation rate among such women.[41]

• *Periodic abstinence.* At one time, the only form of periodic abstinence practiced anywhere was calendar rhythm, which was generally unreliable. However, in recent years, new techniques for detecting ovulation have been developed. Some form of periodic abstinence is used by about one in 20 American couples who plan their childbearing.[42] (Because so few U.S. women rely on periodic abstinence, the method is not shown separately in Figure 1.) There are two methods that are most commonly used in the United States. One is the Billings (or ovulation) method, in which women are taught to follow changes in the volume and consistency of their cervical mucus that identify ovulation; the other, the symptothermal method, combines the tracking of mucus changes and the recording of daily temperature changes. A WHO multinational study of periodic abstinence showed that the ovulation method had a failure rate of 19.6 per 100 woman-years of use, while the symptothermal method produced a rate of 11.2 failures per 100 woman-years.[43]

• *Barrier methods.* Condoms, spermicides and diaphragms are often used by younger women, but they are also common choices among women in their late 30s and 40s (see Figure 1). Use of these methods begins among teenagers and grows steadily until it peaks among 25–29-year-olds; thereafter, reliance on the barrier methods diminishes, but in each group over age 30, more women use these methods than use the pill.

The diaphragm and latex condom were "grandfathered" into the FDA's system of drug and device regulation because they had been on the market before regulation began and had not been shown to cause any serious health problems. As a result of this decision, these older barrier methods have not been studied in the great detail that the newer methods (such as the pill and IUD) have been.

Latex condoms are an excellent product, but depend on a 19th century technology. The time may be ripe to use new materials or approaches; already, an innovative female condom made of polyurethane has been devised.[44] The only testing currently applied to latex condoms involves manufacturing quality, and a great deal of research needs to be done to bring together physical data from quality-control tests and practical experience of breakage during use. Spermicidally lubricated condoms only became available in the United States in the 1980s, 10 years later than in Europe.[45] The most novel addition to the current triad of condoms, diaphragms and spermicides has been the contraceptive sponge, which became available in 1983.[46] In 1988, the FDA approved the cervical cap, another 19th century invention that is used by a very small number of European women.[47] The cap requires even more professional fitting and special training in its use than the diaphragm.

All coitally dependent methods of birth

control are associated with moderate-to-high rates of unintended pregnancy, and each method has shown a wide variation in failure rates, depending on the experience and motivation of the users.[48] Compared with the more effective systemic methods, the advantage of condoms, the sponge and spermicides is that they are over-the-counter methods that can easily be obtained by women and men of all ages and marital statuses. However, the wide and easy availability of these methods makes it difficult or impossible to recruit the large numbers of users needed for extensive scientific analysis of a method, especially when it has been on the market for a long time. Cases of toxic shock have been reported with the sponge, but the attributable risk is low and the absolute risk is minuscule.[49] The diaphragm has been associated with an increased risk of cystitis.[50] One major jury award of $5 million has been made against Ortho in a case in which congenital abnormalities were said to have been associated with spermicide use,[51] even though there is no consistent epidemiologic evidence that such as adverse side effect exists.[52]

Both condoms and spermicides provide the user with some protection against STDs. Spermicides containing nonoxynol-9 kill a variety of viruses and bacteria in the laboratory, and one clinical trial indicated that they reduce the risk of acquiring gonorrhea and chlamydia.[53] As with the automobile's safety belt, condoms and spermicides do not give anything like 100 percent protection against disaster, but they are well worth using.

### Voluntary Sterilization

Because it is never certain that reversal will succeed, surgical sterilization is only appropriate for women who have had all the children they want. However, use of this method is by no means limited to older couples (see Figure 1). Almost as many U.S. women 25–29 years of age are protected by sterilization (male or female) as rely on barrier methods; among 30–34-year-olds, sterilization is by far the most utilized method of family planning.

Between 1965 and 1975, the number of U.S. couples relying on voluntary sterilization tripled. Today, sterilization is the single most common method of family planning in use in the United States, with over 10 million couples depending on it. Between 1973 and 1982, the pill and sterilization changed places as the most popular birth control method among married women 25–34: Pill prevalence fell from over one-third among such women to one-fifth, while the proportion relying on sterilization rose from one-quarter to almost two-fifths.[54]

Vasectomy is most appropriately performed as an office procedure using local anesthetic, and thus there is virtually no mortality. (The worst complications when it is done this way are local bleeding or infection.[55]) Tubal sterilization, on the other hand, involves some sort of abdominal entry, so it is associated with the normal morbidity risks of both abdominal surgery and general anesthesia (if used). There are one or fewer deaths per every 25,000 female sterilizations.[56] Experimental efforts at transcervical surgical tubal occlusion using a hysteroscope have been disappointing and have sometimes proved dangerous, but transabdominal endoscopic techniques have proved safe, and can be appropriately carried out as an office procedure.

The remarkable spread of sterilization in the 1960s was related more to changes in the attitudes of providers (together with some modest improvements in technology) than to any such changes among users or potential users. In other words, a brake that had previously held back reliance on sterilization was removed. However, in a step that is curiously characteristic of family planning in the United States, what had earlier been suppressed became in danger of being overused. Whereas the rate of sterilization among U.S. women over 35 is almost exactly the same in the United States as in Great Britain and the Netherlands, the rate among U.S. women aged 20–29 is about 50 percent higher than comparable rates in those two countries.[57]

Such high rates of sterilization among relatively young women are problematic: On the one hand, access to sterilization is essential when a woman decides in her 20s to terminate childbearing; on the other hand, given that approximately half of all U.S. marriages end in divorce, it is important that couples not adopt sterilization simply because of a lack of alternatives or misinformation about other methods. One study, based on nationally representative data from the 1982 National Survey of Family Growth, revealed that 26 percent of sterilized couples wanted more children and that 10 percent would have liked their sterilizations reversed.[58] As might be expected, women sterilized before age 30 were more likely both to want more children and to wish the operation could be reversed, as were black or Hispanic women, Medicaid recipients and those who were not married at the time of the survey. However, the study did not include a multivariate analysis, and there is no way to determine the intensity of these women's desire for more children or for reversal.

More attention should be given to sterilization reversal. Mechanical occlusion with clips and bands was pioneered in the United States, and such techniques offer the best possibility of repair if a woman decides after having been sterilized that she wants more children (although success rates are still far short of 100 percent). However, electrocoagulation is much more widely used than clips or bands, even though the chances of repair associated with this procedure are minimal. A major reason for the higher recourse to this procedure is likely its marginally lower post-operative pregnancy rate, meaning that the surgeon has less chance of being sued.

### Health and Contraceptives

The value of applying a long-term perspective to contraception is perhaps most evident when we consider reproductive health and the side effects of birth control. Overall reproductive mortality in the United States declined from 7.8 deaths per 100,000 women aged 15–44 in 1955 to 2.1 per 100,000 in 1975, but this decrease in maternal mortality—related to better obstetric procedures, safer abortions and the improved prevention of high-risk pregnancies—was partly achieved at the cost of a certain increase in deaths related to contraceptive use (mainly use of oral contraceptives).[59] More recently, deaths from both fertility and fertility control have fallen, primarily because of the use of low-dose pills and the discouragement of pill use among older women who smoke.[60]

A plausible case can be made for extending the concept of reproductive mortality from pregnancy-related problems and contraceptive use to include deaths from STDs and reproductive cancers. STDs are the outcome of sexual intercourse and are the cause of much morbidity and some mortality. Ovarian, endometrial and breast cancers are all greatly affected by a woman's age at menarche and her pattern of pregnancy and childbearing early in life.[61] Although the lifelong risk of death in childbirth has been reduced to one in 5,000, merely a shift to later childbearing among women born in 1960 compared with those born in 1950 may lead to 55,000 more cases of breast cancer, a disease that now kills one woman in 18.[62]

The explosion in STDs and the advent of AIDS are having a great impact on family planning. With no cures for herpes, human papilloma virus or the human immunodeficiency virus (HIV), only abstinence or the use of barrier methods of contraception can slow their spread. Condoms are being widely promoted as a prophylaxis against HIV transmission, and sales are climbing, although they have still not reached the levels found in the 1950s and 1960s.[63] However, data on the relationship between HIV infection and contraceptive use are very limited[64] and will continue to be difficult to obtain, in part because it would be unethical to randomly expose volunteers to a lethal disease such as AIDS in a clinical trial. Although spermicides containing nonoxynol-9 are known to kill HIV in the laboratory,[65] there is still no clinical evidence that their use provides protection against HIV in vivo.

Perhaps the biggest impact of AIDS on family planning will not be in technology but in the organization, resources and politics of family planning. Staff will have to take precautions against HIV infection, and providers of family planning services may become more and more involved in offering confidential tests for HIV infection. After all, experience in the family planning field—with its emphasis on counseling, informed choice and the autonomy of the client and providers' long involvement in the provision of barrier methods—is probably the single most relevant apprenticeship for work in AIDS prevention. Although work in AIDS prevention may well compete with family planning for both skilled personnel and resources, AIDS is also breaking down some of the remaining obstructions to contraceptive availability, especially in the promotion and advertising of family planning methods.

### Family Planning in the Future

A recent study has suggested that the addition of an acceptable new contraceptive method in the United States could lead to a 56 percent reduction in unintended pregnancies.[66] However, many potential new methods, such as a vaccine against pregnancy, will not be developed in the 20th century unless there is a radical increase in the investment made in contraceptive research and development.

In fact, several contraceptive methods used for a number of years in other developed countries have yet to appear on the U.S. market. For example, clinical trials for FDA approval of new progestogens (such as 3-keto-desogestrel) that may cause less change in blood lipids than existing progestogens are only just beginning in the United States, even though these hormones have been used in Europe for many years.

In addition, Americans still have no formal access to postcoital contraception, even though tens of thousands of doses of oral contraceptives are prescribed for this use* annually in the Netherlands and Canada to prevent unintended pregnancies that would otherwise end in surgical abortion.[67] The difficulty has been that U.S. doctors fear they will be at risk in the courts if a pregnancy continues and results in the birth of a defective child; in addition, between liability fears and concern over boycott threats, pharmaceutical firms are disinclined to ask the FDA to change the oral contraceptive labeling to include postcoital use.

The one truly significant contraceptive development to reach the U.S. marketplace in the 1970s was the reduced estrogen dosage in combined oral contraceptives, and even this came later to American women than to European or Chinese women.

In general, then, U.S. women have been deprived of needed choices. However, a number of modest improvements in birth control technology are nonetheless likely to appear, partly as a result of evolving Food and Drug Administration (FDA) policy. In the 1980s, the FDA simplified its rules to allow animal data already on file for FDA-approved steroids—such as norethindrone (NET) or levonorgestrel—to be used for new formulations and delivery systems, as with the levonorgestrel-releasing NORPLANT® implant. This policy change has made it possible to develop new, sustained-release steroidal contraceptives without having to invest millions of dollars to repeat animal experiments performed earlier. The Agency for International Development, the NIH and the WHO are supporting work on several such formulations that enjoy excellent user compliance, release a low dose of a well-understood, FDA-approved steroid directly into the bloodstream, have low failure rates and are free of estrogen. By being administered parenterally rather than orally, they avoid possible liver damage and side effects such as nausea, which are sometimes associated with pill use. In September 1988, The Population Council submitted documentation to the FDA for approval of NORPLANT. In addition, the Council and the WHO are both studying the release of levonorgestrel from a doughnut-shaped vaginal ring, which delivers the steroid through the vaginal epithelium and into the bloodstream.

Family Health International (FHI) is developing an injectable preparation of NET microspheres that provide three months of protection against pregnancy.[68] FDA-approved trials using 1,200 volunteers have begun in 12 U.S. centers and in five centers in Latin America and Thailand; the method may be submitted for FDA marketing approval as early as 1992. Also under development at FHI are NET pellets, which are biodegradable, subcutaneous pellets of fused NET and cholesterol.[69] Four of the pellets, each a little larger than a grain of rice, are implanted under the skin of a woman's upper forearm using a disposable plastic introducer. They are expected to be cheap and easy to use and to last 12–24 months. If at any time during the first six months of use, the woman experiences unwelcome side effects, the pellets can be removed through a skin incision. However, unlike NORPLANT, NET pellets are biodegradable and disappear shortly after the end of the contraceptive interval, making surgical removal unnecessary. Phase II clinical trials are now getting under way, and Phase III trials should be completed in 1991.†

Sustained-release steroids will offer a convenient way to space or prevent pregnancies. Injectables and implants could also prevent many teenage pregnancies, but there is likely to be neither a social nor a clinical consensus in the United States supporting widespread use of such methods in this age-group. Furthermore, given the present legal climate, it is by no means clear how confident manufacturers will feel in promoting NORPLANT or the 90-day injectable. In addition, both of these methods are likely to be much more expensive in relation to their manufacturing costs than are today's oral contraceptives, perhaps depriving the poor of new methods they might find useful.

Those who promote and use these new methods must understand that innovation and ignorance of long-term side effects necessarily go together: Knowledge about the links between hormones and cardiovascular disease gained from the study of oral contraceptive use cannot be extrapolated to them. Since, after 30 years, we still do not know the effect of oral contraceptives on the human breast, it is likely to be very many years before we know as much as we would like about cancer and the long-acting progestogens.

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*This therapy consists simply of two oral contraceptive tablets taken within 24 hours of unprotected intercourse, followed by two more 12 hours later.

†Phase I clinical trials represent the first stage of research on a new chemical entity in human beings, and are limited to a handful of volunteers. Phase II trials are directed toward discovering if there are any serious adverse effects of the new medication. It is only in Phase III trials that the efficacy of a drug is really assessed. In the case of contraceptives, Phase III trials usually recruit and follow 500–600 users.

Of all the long-acting progestogens, only 30-day injectables, which contain estrogen as well as progestogen, avoid menstrual irregularity. These monthly injectables are popular in Latin America; over one million doses are used each year in Mexico alone.[70] The method might also become popular in the United States, but it will almost certainly never be submitted to the FDA for approval because the cost of acquiring FDA-mandated data is high, and a substantial potential U.S. market is uncertain.

The CuFix, a string of copper rings hanging in the endometrial cavity from a thread anchored in the uterine fundus, is perhaps the ultimate IUD. The absence of a plastic frame reduces IUD-related pain, bleeding and expulsion. The CuFix has performed well in early trials and may be tested in the United States,[71] but, once again, manufacturers are going to be exceedingly cautious because of product liability.

The most revolutionary and controversial development in fertility control in the 1990s will be the further development of emmenagogues—drugs that induce menstruation. In the late 1980s, a combination of prostaglandins and antiprogestins appears to have brought the possibility of inducing menstruation by means of an oral therapy close to reality. All of the antiprogestins that have been developed are synthetic molecules that bind to progesterone receptors at the cellular level; the most studied antiprogestin is mifepristone (RU 486). A dose of 600 mg of mifepristone followed by 1–10 mg of prostaglandin has proved impressively successful and leads to uterine emptying in over 95 percent of cases.[72]

Emmenagogues are sure to continue to create passionate, often uninformed controversy. Biologically, antiprogestins are very early abortifacients that act after the union of the sperm and egg but usually before organogenesis begins. Most biologists, while they accept the genetic uniqueness and awesome potential of the very early conceptus, would not apply to it the same ethical (and, therefore, legal) standards that they would to the embryo later in pregnancy. Most moralists, including some Catholic theologians,[73] also accept this distinction. However, a passionate minority equate the new technology with murder and view as particularly threatening the possibility that a woman could end an early pregnancy by swallowing a tablet in the privacy of her own home.

A case in point is the events surrounding the approval of mifepristone as a birth control method in France and in China in September 1988. Protests and threats of boycotts directed at the drug's French developer, Roussel-UCLAF, led the company to withdraw the drug just a month after its approval. Only the direct intervention of the French government (invoking a 1976 law that gives it the power to compel a company to supply a drug or device important to public health) put the drug back on the market.[74] Similar problems will beset any firm that has the temerity to try to market an emmenagogue in the United States. (During the 1970s and 1980s, such pressures played a role in Upjohn's decision to remove from the market its prostaglandin that was most commonly used in induced abortion.) It is realistic to believe that in the 1990s, American women are more likely to lose one or more of the existing methods now in use—such as spermicides or IUD, perhaps even the pill—than they are to gain an emmenagogue.

Oddly, the wealthiest nation on earth has tried to solve major birth control problems on the cheap. Even today, the NIH spends only 10 cents per capita per year on contraceptive research and development. If a sincere minority of citizens are distressed by abortion, then a quantum leap in investment in contraceptive services and research is essential. Only a much heavier investment will bring into being before the end of the 20th century such developments as a vaccine against pregnancy or the use of inhibin or hypothalamic-releasing hormones as contraceptives.

## A Personal View

Like many Americans, I am an immigrant, but a recent one; I have lived in the United States for only 10 years. Perhaps for this reason, I see particularly vividly some of the paradoxes and conflicts in U.S. society. In the true accounting of the costs of human fertility, the total reproductive mortality is indeed the "bottom line," and I am impressed by the advances that have been made in America. The present low level of reproductive mortality has been brought about by a union of modern curative and preventive medicine, the pharmaceutical industry and academic analysis. In all of these areas, the United States has excelled. Despite some domestic opposition to family planning, the United States has been a source of a high degree of professionalism in the family planning field and has undergone a profound revolution in its philosophy of fertility regulation. Yet, it is these very changes—which have enabled us to offer needed choices to millions of people and to save thousands of lives—that have been assailed by moralists, misunderstood by politicians and the press, jeopardized by the legal profession and sometimes attacked by the women who have had the most to gain from them.

Indeed, U.S. women could exit the 20th century with fewer birth control options than they had in the 1970s. At that time, American couples had access to condoms, spermicides, many formulations of oral contraceptives, a variety of IUDs, outpatient vacuum aspiration abortion and male and female sterilization. The window of contraceptive choice began to close in the early 1980s. Medicolegal and product liability fears, highlighted by the debacle of the Dalkon Shield, led to the withdrawal of a valid method of reversible contraception and left a cloud hanging over others. The 1990s are likely to see the development of one or two new methods of steroidal contraception, but companies may choose not to market them actively; although the pill will continue to be available, important questions about its single most important side effect—namely, its impact on the risk of breast cancer—will remain. Some incremental improvements in methods of voluntary sterilization are likely, but no real promise of dependable *reversible* sterilization lies ahead. And not only are mifepristone and similar drugs unlikely to reach the U.S. market, but there is also a possibility that the availability of legal abortion may be restricted. It is not a happy picture.

As a European by birth, I am struck by the sudden, extreme swings of policy and practice that have characterized birth control in America. The United States entered the 20th century with a uniquely restrictive set of anticontraceptive laws dating back to Anthony Comstock's notorious 1873 "Act of the Suppression of Trade in and the Circulation of Obscene Literature and Articles of Immoral Use." For the next 65 years, vast numbers of people were denied birth control methods that would have been conducive to the establishment of stable, loving families. Pioneers like Margaret Sanger and the other founders of what eventually became the Planned Parenthood Federation of America fought an uphill battle against the laws and customs inhibiting the availability of birth control.

In contrast, the changes in law and clinical practice that occurred between 1965 and 1975 were incredibly rapid. In one decade, the overwhelming majority of adult Americans came to explicitly accept the morality of methods of family planning that had been illegal only a short while earlier.[75] An accompanying revolution in religious attitudes took place: In 1960, American Catholic couples had an average of more than four children, compared with just over three among non-Catholics, and 20 percent of Catholics used the rhythm method; by 1975, the mean family sizes of the two groups were similar, almost identical proportions of each used the pill and fewer than six percent of Catholics still relied on Vatican-approved methods of birth control.[76] Nonetheless, given the history of birth control in America, we should not be surprised that an active minority has kept alive yesterday's political and religious arguments over the licitness of various forms of contraception and the ethics of pregnancy termination.

In addition, many U.S. citizens are not very well informed about science; a 1988 survey showed that one in five Americans believe that the sun orbits the earth.[77] Some of the problems that can arise when groups with highly specialized knowledge interact with people who have little general knowledge about science include both inflated expectations and misunderstandings. For example, Americans seem to expect science to be able to solve any and every problem in isolation, and with no risk whatsoever. At the same time, many women regard the pill as a "dangerous chemical" that they do not want in their bodies, even though use of oral contraceptives appears to be much less dangerous than carrying to term the pregnancies that can result from reliance on less-effective methods or none at all. Ambivalence over contraceptive use and a full understanding of risk will only be finally resolved by a better educated citizenry.

Although there is much that is disappointing about the current situation in the United States, there is also much of which to be proud. The level of professionalization in the delivery of family planning services is high, and the United States has been preeminent both in the epidemiologic evaluation of IUDs, induced abortion and voluntary sterilization and (along with the United Kingdom) in the long-term surveillance of oral contraceptives.

For me, what sets the United States apart from most other industrialized countries is its ability to meet new challenges. There is no reason grounded in history or politics why the pendulum of interest in family planning should not swing back to where it was in the 1970s. The investment required is large in relation to current expenditures on contraceptive research, but is small compared with the returns and is trivial considering the funds spent on pursuits less central to public welfare. The reward will be not only the enhancement of the dignity of the family and preservation of women's health, but also the rescue of birth control from the isolation into which it was pushed by the Comstock mentality.

Until the 1960s, 19th-century laws, social prejudice and religious conservatism kept family planning out of the mainstream of medicine. Not only did women and families suffer from unintended pregnancies and from dangerous abortions, but the whole of medical science was also held back. In particular, childbearing was seen as a series of isolated, almost accidental events. Only recently have we begun to build a lifelong perspective on human reproduction. Clearly, an emphasis on all aspects of reproductive mortality is important. Focusing on the role of oral contraceptives in preventing ovarian and uterine cancer symbolizes a long-term, biological perspective that is just entering medical thinking. Efforts to understand the effect of the pill on reproductive cancers could lead to planned efforts to control such cancers. "The prize for the correct solution," writes Malcolm Pike, "may be nothing less than a practical solution to the control of the present very high risk of breast cancer in the developed world; the possibility of development of an oral contraceptive that would reduce breast cancer should be kept in the forefront of our minds."[78] America has more biologists and medical scientists than any other nation. It would be an enormous loss if the dust from the battles over the politics of birth control or the unreasonably high barriers created by litigation were to obscure a new horizon. That horizon—the scientific manipulation of human reproduction so that individuals achieve their fertility goals *and* have a reduced risk of reproductive cancers or AIDS—may be a long way off, but it is one of the most exciting opportunities in all of medicine.

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## "The Politics of Birth Control"

*(Continued from page 320)*

has been the paralysis of a broad range of policies affecting the reproductive rights and health of women in the United States and, indeed, around the world.

To close on a hopeful note, we may wish to remember the words of Senator Gruening when he opened his hearings some 20 years ago: "The taboo of the day before yesterday becomes the controversial of yesterday, the accepted of today and the wanted of tomorrow."

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# Giving Birth in America, 1988

*By Kenneth J. Ryan*

**Summary**
Advances in medical science have improved the prospects for pregnant women to deliver safely and for childless women to become pregnant. However, the picture is not as positive as it may seem. The liability crisis that is driving many obstetricians out of practice is likely to persist, limiting women's access to obstetric care. Reliance on cesarean delivery has risen to unacceptable levels, in part as a result of excessive use of electronic fetal monitoring. Pregnancy complications, prematurity and perinatal morbidity and mortality continue to be serious problems. U.S. perinatal mortality data do not compare favorably with those of many other developed nations, and the rate of prematurity will probably exceed the 1990 target of five percent set by the U.S. government. Prematurity and pregnancy complications are rooted in the associated social factors of poverty, welfare dependence and limited education, and they will not be eliminated until those problems are eased. There also is little hope that obstetric outcomes can be improved without reducing the extent of smoking, drug use and alcohol consumption during pregnancy. Infertility also can be caused or worsened by social factors that defy easy resolution. For the next 20 years, dealing with these societal problems should be a top priority.

**It is ironic that at a time when "natural" childbirth has become widely accepted, the fear of being sued has resulted in more fetal monitoring, a greater number of cesarean sections and less willingness to accede to the patient's preferences.**

## Introduction

As I began to write this article, I experienced two somewhat conflicting reactions. At first, warming to the topic, I thought it would be easy and upbeat to report on the improved prospects for the childless woman to become pregnant and for the pregnant woman to have a happy outcome for both herself and her infant, all because of advances in medical science and technology. On the other hand, I was quickly challenged by some contradictions in this seemingly rosy state of affairs: Why, in the face of such medical successes, is there a professional liability crisis for obstetricians that is driving many of them out of practice? How could we have succeeded so well in the very costly treatment of infertility, pregnancy complications and prematurity and at the same time have been so unsuccessful in the cost-effective prevention of these conditions? Why, when we have so many unintended pregnancies that are the accidents of "natural" but careless sex, is there so much concern about the morality of in vitro fertilization for the childless, a technology that results in pregnancies that are, at the very least, truly wanted? These questions should bedevil the public and our policymakers, for while our obstetric and infertility outcomes are good, they could be much better; and while medical services reach many in need, they could reach many more.

## Raised Expectations and Malpractice

A wag has suggested that ours is the safest of all times for a woman to have a baby and the most hazardous for her obstetrician. The comment contrasts the vanishingly low level of maternal mortality and the remarkable achievements of neonatal medicine, on the one hand, with the dramatic rise in the number of malpractice claims against physicians and the large sums involved on the other. Malpractice premiums have soared to over $100,000 per year in some areas. By 1987, 71 percent of U.S. obstetricians had been sued at least once.[1] Although there are indeed some bad obstetricians and there is undoubtedly some malpractice, the tort liability system appears to be a poor discriminator.

Ironically, the so-called malpractice crisis is an outgrowth of a medical success story. The outcome of obstetric care is generally so good and patients' expectations so great that even an unavoidable "maloccurence" is likely to be probed for physician error. Because of advances in newborn care, some infants who previously would have succumbed are now surviving. For some of these premature newborns, the price of survival is life with a handicap, a situation that can evoke sympathy from a jury regardless of whether the outcome was preventable. The cost of raising and caring for a handicapped child is enormous, and this can be translated into high malpractice awards or out-of-court settlements. The largest numbers of claims with the highest awards involve brain-damaged or neurologically handicapped infants. In most instances, the cause of the neurological defect is unknown, but too often the presumption is that the physician did something wrong.

There have been changes in the legal process that aid plaintiffs' attorneys in building their cases. For example, the level of care against which a physician's performance is judged and held accountable is now a national one. The expected quality of practice is higher and the scrutiny of physician performance is more stringent now than at any other time in our medical history. At the same time, members of the legal profession now specialize in specific

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areas of malpractice, and attorneys' efficiency in pursuing cases has improved.

It is also ironic that at a time when "natural" childbirth (or at least minimal technical intervention by the obstetrician during labor and delivery) has been growing in popularity and has become widely accepted, the fear of being sued has resulted in more fetal monitoring, a greater number of cesarean sections and less willingness to accede to the patient's preferences.

As if all of that were not bad enough, the availability of obstetricians seems to be declining, with obstetricians retiring earlier, limiting the number of babies they deliver and lessening their exposure to claims by more readily referring complicated cases to subspecialists.[2] There is no doubt that many obstetricians find the practice of their specialty less enjoyable than they once did. I expect that for an indeterminate period, there will be a shortage of obstetricians and of family physicians willing to practice obstetrics. It will be more difficult to find an individual physician who will provide continuity of care; people are already relying more for obstetric services on health maintenance organizations (HMOs), group practices and hospital-based physicians than on obstetricians with a solo practice. The liability problem is being attacked through experimentation with no-fault systems, legislative limits on noneconomic damages, improved licensing-board surveillance of physician competence and the development of professional standards of practice; it is likely, however, to be a long time before the current state of affairs is altered.

## Obstetric Care and Perinatal Outcome

There are many heartening aspects of current obstetric care. According to projections for 1990 from the National Center for Health Statistics (NCHS), the rate of neonatal mortality will be below the target of 6.5 per 1,000 set for that year.[3] In almost half of the vaginal deliveries in our large urban hospital in Boston, no anesthesia (or only local anesthesia) is required, and a birthing room for labor, delivery and recovery is used instead of a conventional delivery room. It is standard for the father or a companion to be present for labor and delivery, even in the case of cesarean section. Seventy percent of patients breastfeed their infants on discharge from the hospital.

On the other hand, a constant effort to shorten the length of the hospital stay for financial reasons shifts the emphasis to services that can be delivered at home or on an ambulatory basis; the result is to make the hospital experience less restful and to place additional pressure on doctor and patient alike, all in the name of economy.

NCHS projections indicate that rates of prematurity will not meet the 1990 target of five percent.[4] Prematurity remains a major cause of perinatal morbidity and mortality; although the United States leads in the successful care of the small premature newborn, we have a higher rate of such cases than other developed countries.[5] Hence, overall perinatal mortality data for the United States do not compare favorably with those of many other developed nations.

The excess of infant and maternal mortality in the black population when compared with such mortality among whites remains particularly disquieting. In a recent study of risk factors accounting for premature birth, our research group identified four predictors; women who are under 20 years of age, are unmarried, receive welfare or have less than a high school education are at increased risk for having a premature infant. Among women with none of these risk factors, the prematurity rate was 4.6 percent; among those with one risk factor, 7.0 percent, and among those with two or more such characteristics, 11.2 percent. The four factors explained much of the difference in the incidence of prematurity between blacks and whites; in addition, low hematocrit was also associated with preterm birth, and was found more often among blacks.[6]

Although socioeconomic differences may be intractable, it is hoped that interventions during prenatal care may make a difference. Programs have been devised to identify patients at increased risk for prematurity, to try to modify risk factors such as poor nutrition, smoking and stress. An effort has also been made to anticipate premature labor and treat it early if it occurs. These approaches have thus far been promising, but they have been tried in only a handful of centers and have not yet been confirmed by adequately controlled clinical trials.[7] Unfortunately, almost 25 percent of pregnant women in the United States do not receive prenatal care during the first trimester,[8] which limits what can be accomplished.

There is little hope that we can greatly improve obstetric outcome in our society without also reducing smoking, alcohol consumption and drug use during pregnancy and without improving the living conditions of those in poverty. Further improvements in our prematurity rate will probably depend as much on good nutrition and decent living conditions as on attempts to manage premature labor when it occurs. It has been calculated that if the prematurity rate in the United States could be reduced by half, the savings in the cost of intensive neonatal hospital care could be as much as $3.38 billion nationwide.[9] This should be a powerful incentive for the establishment of universal health insurance for all pregnant women.

## Cesareans and a Failed Technology

The cesarean section rate in the United States climbed from approximately five percent in 1970 to 20 percent or more in the 1980s.[10] Initially, cesarean sections were performed largely to protect the life of the mother in cases of uncontrollable bleeding, obstructed labor, maternal diabetes or toxemia, all of which require prompt delivery. These indications have not changed in frequency during the last two decades, and thus have not contributed to the increased use of this procedure. Rather, the procedure is now performed under a variety of additional circumstances—including prolonged labor, fetal distress and breech presentation—to improve fetal outcome, and these have tended to dominate as justifications for cesarean section.[11]

In addition, the rate increased rapidly because a cesarean section was in the past always followed by a cesarean in a subsequent pregnancy. This increase in cesarean sections has resulted in an enormous increment in maternal morbidity during the postpartum period, a marginal increase in maternal mortality, increased use of health care facilities and, obviously, an enormous rise in health care costs.

Since perinatal morbidity and mortality have improved as the cesarean section rate has been rising, a cause-and-effect relationship was presumed. (In other words, a high cesarean section rate could be justified by a better outcome for the infant.) However, comparison with other countries where perinatal outcome similarly improved while the cesarean section rate remained low belies this assumption.[12]

Because the improvement seen in perinatal outcome cannot be attributed exclusively, or predominantly, to increased reliance on cesarean section, the rationale for the procedure is undergoing close scrutiny. In the near future, we will see attempts to limit the use of cesarean section through reducing reliance on electronic fetal monitoring, avoiding admittance of women to the delivery suite too early during the early stages of labor, and turning babies that present in the breech position to the vertex position before the start of labor. In addition, obstetricians will encourage more women to try vaginal delivery after a prior cesarean section, an approach that has been shown to be quite safe.[13] Such efforts will require certain trade-offs, both in the conduct of labor and in a willingness to accept the increased risk to the infant that can result from less reliance on monitoring and from longer labors.[14]

The trend toward cesarean section was associated with the laudable achievements of reducing reliance on difficult forceps deliveries and reducing the use of oxytocin (a hormone that causes the uterus to contract). Ironically, although the more liberal use of oxytocin is deplored by many enthusiasts of natural childbirth, its administration is a key practice by which obstetricians in other countries (such as Ireland) have kept the cesarean section rate low.

There is no argument that as long as the course of labor proceeds normally, the less intervention the better, for both mother and infant. The outcome when a healthy woman delivers a term infant is generally excellent. The challenge is to be able to identify the one woman in a thousand who needs help, without intervening inappropriately in too many cases in which the woman would otherwise do fine.

It was once widely believed in the obstetric community that electronic fetal monitoring could reliably identify, in utero, fetal problems that would require intervention. However, as a result of the findings of several large, well-controlled studies, most obstetricians now agree that this is not the case.[15] Although a normal fetal monitoring record is reassuring, abnormal patterns do not necessarily predict bad outcomes; selecting cesarean delivery in all of these cases can result in an excess of cesarean sections. Let us hope that in the future we will have the sense to test our technology more thoroughly before allowing it to enter into routine use. The practical consequences of the introduction of this flawed technology are that it will be both difficult to give up completely in the absence of a substitute and difficult to use wisely when the required risk trade-offs remain uncertain. Other obstetric technologies, including ultrasound, other prenatal diagnostic approaches and intrauterine therapies, will undoubtedly be more carefully scrutinized in the future as a result of this experience.

In sum, it is clear that we have too high a cesarean section rate, which must be reduced without jeopardizing the gains made in infant survival; in electronic fetal monitoring, we have a failed technology that is so ingrained in practice and culture that it will take time to retrain physicians and the public in its limitations. In the meantime, a better method for evaluating fetal health is needed.

## Choice in Conception and Childbearing

While the range of options in obstetric care has narrowed and the field's technology has become suspect, the choices for infertility care have proliferated as a result of technical innovation.[16] The combination of in vitro fertilization and embryo transfer makes it possible to overcome infertility caused by tubal obstruction, abnormal sperm count or function and even infertility of unknown causes. With this technique, a woman can donate an egg (or eggs) for in vitro fertilization; the fertilized egg can then be implanted in a woman with no ovaries or eggs but whose uterus has been artificially prepared for pregnancy with exogenous hormones. For the first time, a female analogy to the donation of sperm for artificial insemination has been realized.

These possibilities have triggered a good deal of adverse commentary about the bypassing of nature and the potential for skirting the traditional social arrangements for having children. On the other hand, people have been circumventing social tradition for years without the benefit of any technology, by means of out-of-wedlock sex and procreation. At least with couples who utilize infertility services and technology, unintended or unwanted pregnancies are seldom an issue.

When the technique of in vitro fertilization was being developed, a strong moral objection was made on the basis that since one could not determine the risk of the procedure for the child so conceived, it should never be tried in the first place. In addition, antiabortion groups were concerned that some fertilized eggs might be discarded in the process, although in fact most are either transferred for implantation or frozen for possible future use. These two points turned out to be a strong impediment to government funding for research on this subject in the United States. In England, however, Patrick Steptoe and Robert Edwards, operating from a different moral perspective and with the encouragement of childless couples, persisted in their work, and in 1978 achieved the first successful birth as a result of in vitro fertilization.[17] Since then, 5,000 successful pregnancies have been achieved worldwide, with no evidence of a significant risk to infants much different from the risks normally associated with natural reproduction.[18]

With the safety issue largely dismissed, the major moral objection to in vitro fertilization remains the potential for its application to individuals or couples outside the traditional marital relationship. Of course, the Vatican Doctrinal Statement on Human Reproduction, which was issued in March 1987, would allow only those medical interventions that facilitate the conjugal act or remedy the causes of infertility.[19] In vitro fertilization is morally illicit according to this doctrine, but in our secular, pluralistic society, most couples will make up their own minds on the subject. In fact, there now appears to be a broad societal consensus on in vitro fertilization. Most commissions and committees in the United States and abroad that have reviewed the procedure have found it morally acceptable.[20]

Some have held the mistaken notion that the rapid advance of technology was itself largely responsible for shifts in social practices and moral confusion about reproduction. While technology may have made it easier for a single person to have a child, it has not contributed much to out-of-wedlock childbearing and teenage pregnancy, which occur much too readily as a result of natural sexual behavior. In fact, the "new" reproductive practice most troubling to society has been the least technological—the use of a surrogate gestational mother, which can be achieved with "low-tech" artificial insemination techniques first used over 200 years ago.

The saga of Baby M, whose gestational mother tried to retain the child born under a surrogacy contract to a married couple, raised a number of moral and legal questions. For example, are generally more wealthy and privileged childless couples exploiting the predominantly poor, less-educated women who become involved in these surrogacy arrangements? Should surrogacy contracts allow for the surrogate to change her mind and keep the child? Should a couple be allowed to seek surrogacy when the wife of the contracting couple could bear a child but does not want to, for less-than-compelling reasons? The current trend seems to be for legislatures to make surrogacy contracts unenforceable and noncommercial rather than to attempt to ban the practice completely.

## Conclusion

The professional liability crisis will effect changes in obstetric practice and care before its financial and emotional burden is lifted. National professional standards of care and quality assurance will improve accountability and performance, but fewer physicians will elect to practice obstetrics or function as solo practitioners. HMOs and other institutionalized services will replace individuals as providers of care and, for a time, obstetric services will be restricted in some communities. Maternal and infant outcomes will continue to improve, reaching the point at which the patient's social and economic characteristics and lifestyle are more important than what medicine can offer. We are almost at that point, but will not reach it without universal health insurance entitlement for pregnancy and newborn care. Cesarean section rates have already reached levels that will induce considerable pressure for change from within the medical profession itself. The demand for new reproductive technologies will continue and expand as infertility services become covered by health insurance policies and social concerns about the safety and propriety of such technologies diminish.

However, we are still treating the symptoms of "diseases" rather than treating or preventing the "diseases" themselves. We have not been successful in preventing prematurity and pregnancy complications because the biological causes of these conditions have their roots in the associated social factors of poverty, welfare dependence and limited education. Changing these social factors, or at least understanding how they influence biological function, has been more difficult than improving perinatal and obstetric care. Similarly, many causes of infertility are social factors that defy easy resolution—for example, delayed childbearing for career reasons, sexual behavior that spreads sexually transmitted diseases and the psychological pressures of demanding work and urban life. We have been less successful in influencing lifestyles than in advancing the new reproductive technologies. For the next 20 years, dealing with this social agenda should be a top priority.

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(Continued from page 291)

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# The Weakening Link Between Marriage And the Care of Children

*By Andrew J. Cherlin*

**Summary**

Over the last 20 years, the proportion of births that occur to unmarried women has increased dramatically, children are now much more likely to experience the breakup of their parents' marriage, and a much greater proportion of children live at least part of their childhood with only one parent. These changes have occurred predominantly among nonwhites and low-income women and children, but have occurred among whites and higher income women as well. Since these changes have done well-documented damage to children's socioeconomic conditions and prospects, an important issue is whether we can improve children's well-being by strengthening the link between marriage and child care. For a number of reasons, however—cultural, political and economic—the role of public policy is limited. Nevertheless, stronger public support is possible for people who wish to marry or stay married, but who lack the resources to do so.

In a nation like Japan, child care is left almost entirely to the family, while in Sweden, the state assumes much of the responsibility; the United States seems to occupy a sort of middle ground. It is likely that U.S. social policy will continue to rely on both the family and the state to care for dependent children, a strategy that implies a continuing tension between public acceptance of changes in family life and public sentiment for a return to older ways.

> **"Studies suggest two general reasons for the decline in marriage that apply to poor and nonpoor, black and white alike: the increasing economic independence of women and the weakening of the cultural imperative to be married."**

## The Changing Context of Childbearing

Between 1945 and 1965, most children in the United States and other Western nations were born to and reared by married parents. Those were the decades of the postwar baby boom, a time of early marriage and modest levels of divorce. But since the mid-1960s, the link between marriage and the bearing and rearing of children has been weakened. Why has this happened, and what are the consequences for children, parents and society? To address these questions, we focus in this article on the changes that have taken place in three areas of family formation: out-of-wedlock childbearing, marriage and divorce, and living arrangements.

- *Out-of-wedlock births.* The proportion of births that occur to unmarried women has increased dramatically during the 20-year life span of *Family Planning Perspectives*. Indeed, this journal has been the leading chronicler of the rising rates of out-of-wedlock pregnancy and childbearing among U.S. adolescents. But the phenomenon extends beyond adolescence and beyond the United States. Its international nature is illustrated in Figure 1, which shows the trend from 1965 to 1985 for this country and four other Western nations. The United States, England and Wales, and France have all experienced an increase in the proportion of out-of-wedlock births, from 6–8 percent in 1965 to about 20 percent in 1985. (The exact figure for the United States in 1986, the latest year for which information is available, was 23 percent.[1]) These countries stand between Sweden, where the proportion of such births is rapidly approaching 50 percent, and West Germany, where it is about 10 percent.

In the United States, several factors have contributed to this trend. Sexual activity has increased dramatically among unmarried adolescents and young adults, but the use of contraceptives has lagged far behind.[2] Although the proportion of pregnant young women choosing to have an abortion has increased since the 1973 Supreme Court decisions on abortion,[3] the proportion choosing to give birth without marrying has also increased: In the mid-1960s, for example, fewer than half of all pregnant single women who carried to term were unmarried when they gave birth, whereas in 1980 about two-thirds were single.[4]

The aggregate figures on out-of-wedlock childbearing, however, mask sharp differences between racial subgroups: The proportion of babies born out of wedlock is much higher among blacks than among whites (61 percent in 1986, compared with 16 percent[5]). Data for 1980 show that just six percent of black women who conceive out of wedlock and carry the child to term marry the child's father before the birth; among corresponding white women, the figure is 46 percent.[6] And unmarried black fathers are much less likely than white fathers to marry the mothers of their children *after* the birth. A Chicago study found that 23 percent of black fathers in poverty areas married the mothers of their children within three years of the birth, compared with 60 percent of non-Hispanic white fathers in those areas.[7]

Early marriage in general has decreased in the United States. During the baby-boom years, early marriage was more prevalent than at any other time in the 20th century.[8] Since the mid-1960s, the average age at first marriage has risen steadily. A pregnant 18- or 19-year-old

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who got married in 1960 would have had plenty of company—31 percent of all 18–19-year-olds were married.[9] But to marry at those ages today is to stand out: Just nine percent of 18–19-year-olds were married in 1987.[10] Age at first marriage has risen even faster for blacks than for whites. In 1987, married teenagers were almost nonexistent among black women; only three percent of black 18–19-year-olds had ever been married, compared with 12 percent of whites aged 18–19. Among women 20–24—the age-group whose behavior has been the best indicator of trends—22 percent of blacks, but 43 percent of whites, had ever been married.[11]

As a result of these trends, it has become much more common for an American child—white or black—to begin life with unmarried parents. And while it has become more common for children in most other developed countries as well, the social meaning of out-of-wedlock childbearing—its relation to household composition and the extent to which it presents a problem—is different in the United States than it is in other developed countries. This is a point to which I will return later.

- *Divorce.* Children are now much more likely to experience the breakup of their parents' marriages. The U.S. divorce rate doubled between the early 1960s and the mid-1970s, and since the late 1970s has remained at a high plateau; the rate has also increased sharply in other Western countries.[12] If current rates remain unchanged, nearly half of all marriages in the United States will end in divorce.[13] About 40 percent of children born to married parents will witness the breakup of their parents' marriage before they reach age 16. Many of these children will subsequently witness the remarriage of their mothers (who are usually the custodial parent), but two-thirds will see their mothers remain single for five years after the breakup. And among children whose mothers do remarry, about half will experience a second marital disruption before they reach age 18.[14] Compared with whites, blacks who marry are more likely to separate, those who separate are less likely to get a formal divorce and those who divorce are less likely to remarry.[15]
- *Children's living arrangements.* All these changes in family formation and dissolution have had a striking impact on the living arrangements of children. Twenty-five percent of all children under the age of 18 are living with only one parent; however, the racial difference behind this statistic is very large.[16] As Table 1 (page 304) shows, black children are about half as likely as white children to be living with both parents (43 percent versus 81 percent). They are about nine times more likely to be living with a never-married parent (29 percent compared with three percent of whites) and are about two times more likely to be living with a separated, divorced or widowed parent. The most common arrangement for black children under age six—applying to 45 percent of them—is to live with a never-married mother.

Only a small minority of black, never-married mothers report that they are living with the child's father or another man. Among all black children under age six who live with a never-married mother, about 12 percent have an adult nonrelative (the term the Census Bureau uses for a cohabiting partner) in their household, and 41 percent have another adult relative in the household, most likely a grandmother. Thus, it is common for young black children of unmarried mothers to live in three-generation households. But these three-generation households tend to be temporary; among black children aged 6–11 who are living with unmarried mothers, only 25 percent have another relative in their household.[17] This decline in coresidence is consistent with the findings of a well-known study that folllowed black teenage mothers in Baltimore for 17 years.[18] Apparently, most black unmarried mothers eventually establish separate residences, even though many live with their own mothers or another relative temporarily after they give birth.

Table 1 demonstrates that most of the single parents of white children are divorced or separated, whereas a majority of the single parents of black children have never been married. Thus, marital disruption, rather than out-of-wedlock childbearing, is the main phenomenon leading to single-parent families among whites.

Still, a nonnegligible fraction of white children are now living with a never-married parent: three percent of all those under age 18 and six percent of those under age six. Moreover, birthrates for unmarried white women have been increasing since 1970, whereas birthrates for unmarried black women have been declining.[19] White never-married mothers, however, may be cohabiting with their children's fathers in greater proportions than are black never-married mothers. Among white children under six living with an unmarried mother, 22 percent have an adult nonrelative in their household, compared with 12 percent among similar black children.

Table 1 also presents data for children of Hispanic origin, who may be either white or black. Unfortunately, this category combines Mexican Americans, Puerto Ricans, Cuban Americans and smaller groups. The family patterns of these groups are so diverse that interpretation of a total Hispanic category is difficult. Moreover, the Bureau of the Census has not published comparable figures for "non-Hispanic whites" and "non-Hispanic blacks." Suffice it to say that the proportion of Hispanic children living with just one parent lies between the proportions for whites and blacks.

## Social Consequences

Should our society be concerned about the weakening link between marriage and the care of children? Should we try to strengthen the link to improve the well-being of children? The decision to marry

**Figure 1. Percentage of births occurring out of wedlock, selected Western countries, 1965–1985**

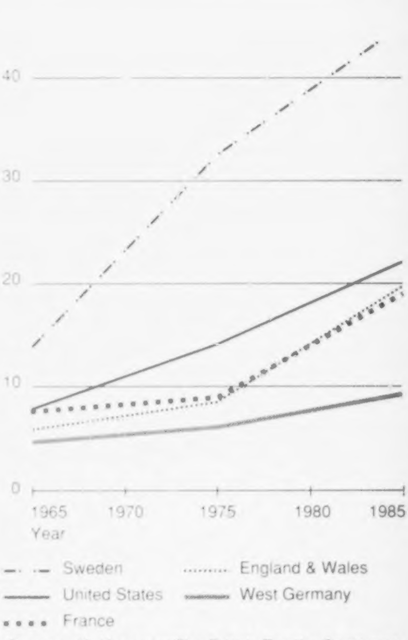

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**Table 1. Percentage distribution of children under age 18, by living arrangement, according to race/ethnicity, March 1987**

| Living arrangement | Total | White | Black | Hispanic* |
|---|---|---|---|---|
| **All children†** | (N= 61,080) | (N= 49,976) | (N= 8,939) | (N= 6,382) |
| With both parents | 75.3 | 80.8 | 43.1 | 68.1 |
| With a never-married parent | 7.0 | 3.2 | 29.2 | 10.0 |
| With a separated or divorced parent | 16.1 | 14.7 | 24.8 | 19.8 |
| With a widowed parent | 1.6 | 1.2 | 2.9 | 1.9 |
| **Children under age six†** | (N= 21,388) | (N= 17,555) | (N= 3,107) | (N= 2,390) |
| With both parents | 76.9 | 83.3 | 38.9 | 68.9 |
| With a never-married parent | 11.5 | 5.8 | 44.5 | 15.0 |
| With a separated or divorced parent | 11.2 | 10.5 | 16.0 | 15.3 |
| With a widowed parent | 0.4 | 0.4 | 0.6 | 0.8 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

*Persons of Hispanic origin may be of any race

†Excludes children not living with either parent

**Note**: Ns are in 000s

**Source**: See reference 10, Table 9

or to divorce is private, and thus far has been regarded as beyond the scope of public policy. For the encouragement of marriage to become an objective of public policy, three propositions would have to be demonstrated: first, that children who live with married parents are substantially better off than are those who do not; second, that marriage itself—rather than some associated or preexisting factor—causes the observed differences in children's well-being; and third, that there is a reasonable prospect that public policies could increase the number and stability of marriages without an unacceptable loss of personal freedom.

The first proposition—that children who live with married parents are better off—is easily demonstrated, especially with respect to income. According to data from the 1980 census, nine percent of children who were living with two married parents had family incomes below the poverty level, compared with 18 percent of children living with a cohabiting parent and 47 percent of those living only with a mother.[21] There are also differences in noneconomic outcomes. The children of the black unwed adolescent mothers in the Baltimore study experienced "massive school failure." By ages 16–17, half had repeated at least one grade in school. Moreover, the odds of a child's repeating a grade more than doubled if the mother had not married by the 17-year follow-up.[22] Another study found that women who grew up in single-parent families were more likely to have children before marrying and to see their own marriages break up.[23]

The second proposition—that marriage or its absence is the cause of these differences—is more difficult to substantiate. The problem is to determine whether marriage makes people better off or whether better-off people are the ones who get married and stay married. Consider the relationship between the growth of single-parent families headed by women and the trends in poverty. Much public commentary has asserted that the growth of female-headed households is associated with increases in poverty.[24] But an analysis of the longitudinal Panel Study of Income Dynamics (PSID) showed that many female heads of household were poor before they split off to form their own households. Only about half the spells of poverty among white women in the PSID, and just one-fourth of those among black women, began concurrently with changes in household composition. The researcher concluded that much of the growth in poor female-headed black families represents a "reshuffling" of already poor people into different household structures, rather than a direct cause of poverty.[25]

An analysis of remarriages among women in the PSID showed a similar kind of selectivity at work. The investigators first demonstrated that divorced women who remarried recouped much of the family income they lost upon their divorce. But they also showed that the divorced women who remained unmarried tended to be women who, because of certain characteristics, were less likely to attract new partners with higher incomes. Consequently, had these divorced women chosen to remarry, they would not have recovered nearly as much income as did the women who did remarry. In other words, those who had the most to gain economically had already remarried; were the others to do so, the benefits would have been less.[26]

Still, the PSID data clearly indicate that a marital breakup often has an adverse impact on children's economic well-being. Most children whose parents divorce remain with their mothers, and the standard of living of these one-parent families often drops in the first year after the divorce; in the PSID, it decreased by about 30 percent.[27] Thus, the conclusion to be drawn from the PSID data is that decisions about marriage and divorce are sometimes the cause and sometimes the effect of a family's economic status.

The third proposition—that public policies could encourage and support marriage—would seem to hold true only under a restricted set of circumstances. Public policies may be able to help people who wish to marry or to stay married but cannot do so. William Julius Wilson and Kathryn M. Neckerman have argued recently that the decline in marriage among blacks has been due to the increasing unemployment of black men aged 18–24 since the mid-1960s.[28] The implication is that the growing shortage of black men who can be expected to support a family has caused young black women to turn away from marriage.

If this argument is correct, then public efforts to increase the proportion of black men who are employed could result in more marriages and fewer single-parent families. How to reduce joblessness among black men is, to be sure, a difficult question for policymakers. Wilson and Neckerman advocate a combination of macroeconomic policies to promote growth and tight labor markets and on-the-job training and apprenticeships to aid the disadvantaged.

Others claim that current programs that transfer income to the poor create disincentives to marry and to stay married. They argue that Aid to Families with Dependent Children and related transfer programs are responsible for much of the growth in single-parent families.[29] Those sympathetic to this view advocate a sharp reduction in public assistance benefits to force the poor to rely on spouses and the labor market for support. But public assistance benefits were reduced—through a loss of 20 percent of their purchasing power—between the early 1970s and the mid-1980s without any slackening of the growth of female-headed families.[30]

Still, in principle, new policies and programs could facilitate marriage among those who want to marry. However, much of the decrease in marriage has been due to a declining wish or need to marry. Here there would seem to be no appropriate role for public policy. Two recent studies have addressed this issue among blacks.

The first, by a prominent demographer, argued that marriage among blacks has declined primarily because the relative earnings of black women have increased sharply.[31] That is, black women reached virtual earnings parity with white women in the 1970s, but black men have made much more modest progress in relation to white men. Therefore, the argument goes, black women have less of an economic incentive to marry than do white women.

The second study analyzed the decline in marriage rates during the 1970s in North Carolina and Virginia, two states that provide detailed demographic data.[32] The investigators used educational attainment as an index of a person's attractiveness in the marriage market. They found that the propensity to marry declined more among blacks than among whites and that the educational attainments of men and women of both races had a relatively modest influence on the decline. To the extent that educational attainment is an indicator of potential earnings (and it may be less so for blacks than for whites), these results imply that the propensity to marry was decreasing in the 1970s irrespective of changes in potential earnings.

These studies suggest two general reasons for the decline in marriage that apply to poor and nonpoor, black and white alike: the increasing economic independence of women and the weakening of the cultural imperative to be married. Evidence for the effect of economic independence has been presented in several studies.[33] A pair of national surveys conducted in 1957 and 1976 provide evidence of the cultural shift in norms. In both surveys, the respondents were asked, "Suppose all you knew about a man (or woman) was that he/she did not want to get married. What would you guess he/she was like?" In 1957, half the sample responded that the person probably was deficient in some way: sick, immoral, selfish or neurotic. But in 1976, only one-third gave such negative opinions; most were neutral. The question "How is a man's (woman's) life changed by being married?" elicited positive responses in 1957 from 40 percent of the sample, who described marriage as opening new opportunities and enlarging life; just 20 percent expressed negative views emphasizing burdens and restrictions. In contrast, almost as many of the 1976 respondents held negative views as positive views. The authors of a massive book on these surveys wrote: "Perhaps nowhere in the book will we see such a dramatic change from 1957 to 1976 as we have in men's and women's increased tolerance of people who reject marriage as a way of life."[34]

To reverse this cultural shift is beyond the bounds of public policy in the United States, for two reasons. First, no one knows how to do it. The usual instruments of government policy are not designed to produce massive cultural change. Second, even if we knew how to do it, most Americans would not want to. Constraining people's choices about family life would impose too great a cost on the individual autonomy that Americans value so highly. Similarly, no public policy that attempted to increase the attractiveness of marriage by limiting women's work opportunities would be feasible. Most Americans would oppose it on egalitarian grounds (women should have the same opportunities as men), libertarian grounds (the government should not constrain individual choices), economic grounds (women increasingly provide a crucial part of their families' income) or all three.

In conclusion, there is some justification for policies that allow more individuals to marry and that support couples who wish to stay married. To the extent that joblessness among men precludes successful marriages or tears apart existing marriages, policies that increase employment among the disadvantaged will clearly benefit the new workers and their children. Direct income supports for families, such as an increase in the Earned Income Tax Credit for low-income families with dependent children, might also shore up existing marriages. But policies that would merely impose marriage or discourage divorce without much accompanying support would be less acceptable and less effective. Such policies would swim against the current of cultural change and would create precarious unions of little clear net value to the parents and children involved.

## A Middle-Ground Strategy

One developed country in which childbearing and childrearing take place almost exclusively within marriage is Japan. Fewer than one percent of all children are born out of wedlock, the divorce rate remains very low by Western standards and 94 percent of children under age 18 are living with both parents.[35] In Japan, marriage and kinship remain central to the care of both children and the elderly, and government social welfare programs are modest.

In Sweden, on the other hand, marital status and kinship ties are much less important for the care of dependents, because an elaborate and costly set of social welfare programs has been developed, with children's allowances, paid work leaves for infant care and state-run day-care centers.[36] Nearly half of all children are born out of wedlock, cohabitation before marriage is nearly universal and Swedish law is moving toward viewing marital and nonmarital unions as equivalent.[37]

These two nations illustrate the extremes in the developed world of kin-oriented and state-oriented strategies for the care of children. The problem for American children and adolescents is that the United States does not follow either strategy consistently. Consider teenage childbearing. In both Japan and Sweden, the fertility rate among teenagers is lower than in most other developed countries.[38] Yet, this low fertility is achieved by very different mechanisms: low rates of intercourse in Japan and high rates of intercourse combined with government provision of contraceptive and abortion services in Sweden.[39] U.S. teenagers have moderately high rates of intercourse but somewhat more restricted access to contraceptives and abortion than do Swedish adolescents. In Japan, adolescent sexual activity is prohibited by family and community; in Sweden, it is accepted and its consequences are addressed by the state. In the United States, however, it is neither successfully prohibited nor fully accepted. American teenagers have the worst of both worlds: loose family control over their sexual behavior combined with limited public acceptance of that behavior and meager public support for measures to prevent pregnancies among teenagers. As a result, they have relatively high birthrates.

A similar story can be told about single-parent families. Japan has a much smaller percentage of such families than does the United States because nearly all childbearing in Japan occurs among married couples.[40] One may assume that Sweden has a much larger percentage of single-parent families than does the United States because of the far higher proportion of Swedish babies who are born out of wedlock. But this assumption is false. In 1980, the percentage of single-parent families in Sweden was actually lower than in the United States, according to one estimate,[41] because a large proportion of the unmarried women who gave birth in Sweden were living with a male partner.* The proportion of young adults living in unions (married and cohabiting) has decreased much less in Sweden than in the United States.[42] Furthermore, single parents receive more generous public assistance in Sweden than they do in the United States. Therefore, the social problem posed by single parents is worse in the United States than it is in either Japan or Sweden.

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*Exact proportions are difficult to estimate because many of these unions dissolve. Liljeström reported that nearly two-thirds of the mothers in a 1971 Swedish survey whose children were born out of wedlock were cohabiting with the fathers of their children. (See reference 36.)

It is unlikely that the United States will gravitate toward the Japanese model of reliance on kin. The value Americans place on personal autonomy and individual choice would prohibit it. Although Americans also value close family ties, they are not, in general, willing to accept the limited choices and greater family obligations that a strong kin-based system of support would entail.[43] Some further movement toward the Swedish model of reliance on the state probably will occur. But the welfare-state strategy has become less attractive to Western nations in the 1980s. The growing burden of the frail elderly and the fiscal crises faced by governments have led many observers to conclude that there is a limit to what governments can provide. In the United States, concern about poverty among women and children has led to a renewed emphasis on marriage as an important support mechanism.

It seems most likely, then, that American social policy will continue to follow a middle-ground strategy of reliance on both the family and the state for the care of dependent children. This strategy implies an ongoing tension between public acceptance of changes in family life and public sentiment for a return to older ways. For example, there is still a debate about the care of children of working mothers. Whereas liberals urge the passage of day-care and parental work-leave legislation, many conservatives oppose such measures on the ground that they will further weaken the two-parent breadwinner-homemaker family. To be sure, a partial consensus has been reached about welfare and child support: Liberals have acceded to measures designed to compel more absent fathers to make child-support payments, and bipartisan support in Congress led to the passage of welfare reform legislation in 1988 that emphasized ways to reduce the dependence of poor single mothers on public assistance.[44]

But beyond these measures, there is much disagreement about how to balance state intervention and family autonomy in the care of children. Further attempts to resolve this debate will be a major task for those concerned with social policy in the 1990s.

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# Population and Family Planning: An International Perspective

By *Peter J. Donaldson and Charles B. Keely*

**Summary**

Since the 1960s, the U.S. government has supported population and family planning programs in Third World countries, on the grounds that rapid population growth impairs the ability of those countries to develop economically; family planning programs contribute to fertility decline; and such programs help improve the health of mothers and children. Although the United States remains the largest single donor of funding for international population programs, its support has weakened during the eight years of the Reagan administration and patterns of funding for those programs have changed substantially.

Since the 1960s, however, contraceptive use has increased in the Third World and fertility has fallen substantially. The decline has been uneven, though—considerable in some countries, moderate in others but very small in many. The performance of family planning programs around the world has varied widely, and questions remain as to what, if anything, can be done to increase success.

For the future, three aspects of population and fertility control in developing countries merit special attention: the supply of contraceptive commodities going to family planning programs; the maintenance and strengthening of the family planning infrastructure; and the need to examine the policy implications of differing patterns of fertility and population growth for national development and individual well-being.

## Introduction

The connection between human welfare and changes in the size, distribution and rate of growth of the population has been clear to Americans since the earliest days of the republic. Thomas Jefferson worried about the effect that changes in population size would have on the happiness his Declaration of Independence said all men had the right to pursue.[1] Jefferson's life illustrates another of the aspects of reproductive behavior that has long troubled Americans. The most recent Jefferson biography claims that "the rigors . . . of bearing a child every other year . . . weakened and ultimately killed" Jefferson's wife, Martha. The historian scolds Jefferson for being "as unwilling as any male of his class to deny himself the pleasures of the marital bed because of his wife's poor health" and for apparently failing to practice contraception, even though he was probably familiar with the birth control techniques that were available.[2]

The concern about the consequences of demographic change for politics, economics and health has stayed with us throughout our history. But the American interest in population has not always been one of the nation's most attractive characteristics. Some of the best known of the early advocates of population control (e.g., Henry Pratt Fairchild) argued an essentially racist case, pointing to the assumed disadvantages society would experience if people of one kind reproduced more rapidly than people of another kind.[3] Worry about population growth for reasons of race or class has faded during the 20th century, especially since World War II. The important motives for America's support of population and family planning activities over the past three decades have been political and humanitarian. Americans continue to be concerned about the effects of population growth on economic and political development; but unlike Jefferson, they worry about the impact of high fertility on the health and welfare of families. These concerns, moreover, have focused not only on the United States but on developing countries as well. This article reviews recent thinking about population growth and family planning in the developing world, outlines the experience of the past 20 years, and suggests the population and family planning issues that will need attention over the next 20 years.

## Perspectives on Population

In 1969, another American president—Richard M. Nixon—summed up the prevailing view of population growth in official circles when he noted that it was "a world problem which no country can ignore, whether it is moved by the narrowest perception of national self-interest or the widest vision of a common humanity."[4] Americans have never forgotten their self-interest, but neither have they lost their wider vision.

The U.S. government program to promote slower population growth in the developing world began in the early 1960s. Most experts believed that rapid population growth was a serious threat to the development prospects of poor, Third World countries, and that the economic development of those countries was essential for a stable world order and for their resistance to communism, considered the key political danger of the age.[5] Especially in its implementation, the U.S. population program was then—and still is—based on a fundamentally optimistic view of the prospects of developing countries, as well as on a willingness to help those countries achieve their development goals.

Two questions have preoccupied those who have worked in the international

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population and family planning field or studied the demography of the developing world. The first concerns the consequences of high fertility and rapid population growth. The second asks about the influence of family planning programs on the level and pattern of contraceptive use and fertility. Despite the extensive research that has been done, we still need to learn a good deal more about these issues, especially about the effects of different patterns of fertility and population growth on individual well-being and family life. We also need to work on articulating a perspective on these issues that is scientifically credible, that provides guidance to health and family planning program managers and that strengthens public and government support of both research and programs. Nevertheless, in spite of a need for more research and a better formulation of what is already known, there is a working consensus among most professionals, what sociologists call "a common stock of knowledge,"[6] that very rapid population growth hinders the economic development of poor countries and that organized, government-supported family planning programs can make an important difference in the pattern of contraceptive use and hence in the level of fertility.

This consensus has prevailed for some time. In 1975, Bernard Berelson, then president of The Population Council, spelled it out in a debate that had already grown old: "If population growth rates were halved tomorrow in the developing countries, that in itself would not solve the problems of poverty, education and illiteracy, sanitation and disease, and all the rest. At the same time, it would provide a better opportunity for their solution."[7] Ten years later, presenting the results of a National Academy of Sciences study on the topic,[8] demographer Samuel Preston echoed Berelson's point: ". . . Conventional indicators of economic progress, such as per capita income or the percent living in poverty, will usually improve faster when population growth slows." But "it is obvious to anyone who has thought about it that a population growth strategy by itself is not going to be enough to make a poor country rich. If Bangladesh's population were cut in half and somehow this were accomplished without inducing any decline in total production, Bangladesh would still be classified . . . as one of the world's poorest countries. . . ."[9]

Because the consensus position tends to be the "praiseworthy . . . balanced view,"[10] it commands less attention than more strident but less widely shared opinions (for example, that the effects of rapid population growth are almost entirely beneficial[11] or are nearly always catastrophic[12]). Professionals still argue among themselves about the details of the relationship between population growth and poverty and about the impact of family planning programs on fertility, but many of their disputes are so simplistic that they have the flavor of the currently popular confrontation radio and television shows. These debates do not reflect the opinions of most scientists working in the field. The important unanswered questions are how much does population matter under different circumstances, and given that population does matter, how can and should public policy respond?

The lesson of the past 20 years is not that changes in population are irrelevant but that other economic and social influences are also at work. The issue that is still in dispute concerns the importance of these other influences compared with changes in population size, distribution and growth rate. Even with respect to poor countries that have high growth rates and limited land, natural resources and infrastructure, it is difficult to accept radical public policy solutions to perceived demographic imbalances, because it is so difficult to calculate the gains that altered demographic circumstances would provide and to be sure that these gains could not otherwise be obtained more easily.

## Programs and Behavioral Change

The U.S. government entered the international population field during a period of "rationalist omnicompetence"[13] in government, when almost all problems, including those related to the regulation of childbearing by the rural poor of the Third World, were seen as largely technical or administrative. The Office of Population within the Agency for International Development (AID) exhibited the certainty of the times. The founding director of the office, Reimert T. Ravenholt, promoted a program based primarily on increasing the supply of contraceptives available to couples in developing countries. In the process, he and his staff pushed aside more complex or measured approaches to the delivery of family planning services, refusing, for example, to join with other AID offices in a cooperative approach to the related problems of high fertility, low child survival and poor reproductive health. Over the past 20 years, a growing awareness of the complexity of the determinants and consequences of fertility and contraceptive use have led policymakers to be more cautious about the likely success of simple approaches to fertility control.

Some analysts have disputed the utility of providing subsidized contraceptive services in order to lower fertility, arguing that the methods provided through family planning programs substitute for fertility control that would be practiced anyway. Nevertheless, these critics have proposed no politically acceptable, fundable alternative to organized family planning programs (beyond development projects of a sort that would be supported anyway) for lowering fertility and slowing population growth. Moreover, the past two decades have seen a growth in government support for family planning services throughout the developing world and widespread increases in contraceptive pratice and declines in fertility.[14] Viewed from almost any perspective, these changes have been nothing short of remarkable. A global focus, while not the most useful for understanding demographic change, does provide a clear indication of the magnitude of the contemporary transformation in reproductive behavior.

The number of married women in the developing world who use contraceptives increased from a few million in 1960 to approximately 400 million in 1987.[15] Since the 1960s, the annual increases in contraceptive prevalence in developing countries have ranged from less than one percent per year (in Pakistan, for example) to more than three percent per year (the case in Thailand). The pattern of contraceptive use has also changed substantially. An increasing proportion of couples rely on sterilization, which has become the most widely used method of fertility control, followed by IUDs (mainly because of their popularity in China), oral contraceptives and condoms.[16] Partly as a result of the increased prevalence of contraceptive use, the total fertility rates of developing countries have fallen by about one-third, on average, over the past 25 years. Other variables through which socioeconomic factors exert their influence on fertility—e.g., age at marriage, breastfeeding behavior and use of induced abortion—have also contributed to fertility decline. The declines in fertility have been substantial in some countries, moderate in others, but extremely small or nonexistent in a large part of the Third World, particularly sub-Saharan Africa, South Asia and the Arab world.[17]

These changes in contraceptive use and fertility have had a substantial impact on population growth. However, population growth has not slowed as much as it would have if mortality levels had not also continued to decline throughout the developing world. Moreover, because previous high fertility has produced such large numbers of women in the prime childbearing age-groups, substantial declines in fertility rates do not immediately translate into substantial reductions of population growth. Thus, the countries of the developing world continue to face the prospect of rapid population growth, the long-term consequences of which are unclear to policymakers and ordinary citizens alike.

From the beginning of organized international efforts to slow population growth through the promotion of family planning programs, questions have been raised about whether people would change their reproductive behavior if contraceptives were made more available, or whether culture and social structure would instead place substantial barriers in the way of such change. Despite hesitations and misgivings, strong leadership developed, tested, implemented and, in many places, eventually institutionalized family planning programs. The successes were astounding, especially in light of the arguments that were made explaining why people would not adopt modern contraceptives.[18] Taiwan, Thailand, South Korea, Singapore, Java in Indonesia, Kerala State in India, Colombia, the Dominican Republic and Mexico are among the places where couples have made what some believed would be impossible changes in reproductive behavior in a remarkably short time.

Of course, there are also places, such as Pakistan, Bangladesh, Egypt, Kenya and many states of India, where no amount of foreign aid devoted to family planning programs has been able to make much of a difference in fertility. There are also a few countries (India, China) where program successes in broadening contraceptive practice have at times come at a social, political and ethical price that, at a minimum, has caused profound concern even to committed family planning supporters.

The variable performance of family planning programs around the world is well-known. Research has shown that on average, higher contraceptive prevalence rates have been recorded in countries with both strong family planning programs and comparatively good socioeconomic conditions.[19] But questions remain as to why program effects have varied so widely and what, if anything, can be done to increase success in ways that fit with individual and national values as well as with available resources. Disagreement over the answers to these questions troubles the field. By influencing couples' childbearing desires, do family planning programs exert an independent and decisive effect on fertility? Or do programs simply enable couples to implement fertility desires that change only in response to propitious socioeconomic conditions and that could be met in other ways? Such questions are not merely of academic interest—African policymakers and program managers, for example, need to know what proportion of domestic and international development resources to invest in family planning.

The debate about the impact of family planning programs has had increased salience during the last eight years because the Reagan administration has questioned the rationale for U.S. support of family planning programs in developing countries, and has threatened program funding. Indeed, funding patterns have changed substantially, in part as a result of the reshaping of official U.S. policy at the 1984 International Conference on Population held in Mexico City. The U.S. position at the conference was that except in a few places where there might be "localized crises," population growth was not a problem. Most supporters of international family planning aid had believed that the negative consequences of population growth for economic development were well established and did not need further demonstration; furthermore, family planning programs were thought to be at least part of the answer to the problem of population growth. However, Julian Simon's book *The Ultimate Resource* was quite influential in the policy circles that helped guide the Reagan administration.[20] Simon argued that population growth per se was not a problem, and senior officials in the Reagan administration agreed. In their view, population growth had a neutral, perhaps even positive impact on economic growth, and whatever social adjustments population growth might necessitate could be obtained from free markets. Less government intervention, not greater support for national population programs, was the Reagan prescription in population as in other matters.

Ironically, 10 years before the Mexico City conference, at a similar international meeting held in Bucharest, the United States had lobbied hard for greater efforts to slow population growth and to encourage family planning. Indeed, members of the U.S. delegation had hoped the conference would agree to specific growth-reduction targets. In 1974, the American position did not find great support. By 1984, however, most developing countries had decided that rapid population growth was detrimental to their development prospects. Once again, the United States was out of step with the majority view, but this time the government had lost its conviction regarding the importance of population growth and its commitment to family planning programs.

The Reagan administration's attempts to reduce and eliminate family planning assistance as part of international aid have met with limited success. In 1981, the Office of Management and Budget suggested zeroing population assistance out of the federal foreign aid budget; the cuts attempted were reportedly restored by Secretary of State Alexander Haig, however.[21] Because of congressional intervention, total U.S. funding for international population assistance has remained at about the same level, but the administration has withdrawn funding from arguably the two most important international population organizations—the United Nations Fund for Population Activities (UNFPA), defunded in 1986, and the International Planned Parenthood Federation (IPPF), defunded in late 1984. Action was taken against the UNFPA because it provided support for China's family planning program (against which charges of coercion had been raised), and against the IPPF because of the issue of abortion. At the Mexico City conference, the Reagan administration had announced that it intended to stop funding nongovernmental organizations that were associated in any way with abortion services in developing countries, even if they used non-U.S. monies for the purpose. The IPPF, by refusing to terminate support for its national affiliates that provided abortion services, became the first organization to lose U.S. funds. The administration similarly attempted to stop funding for another leading international population organization—the Family Planning International Assistance division of the Planned Parenthood Federation of America—because the FPIA also refused to agree to be bound by the new abortion policy. However, the FPIA brought suit against the government, and funding of its programs has continued pending the outcome of litigation.[22]

As a result of the administration's position on the consequences of population growth, the Agency for International Development and much of the population community have had to search for additional justifications for continued U.S. foreign assistance to family planning programs. The negative health consequences of high fertility have been adopted as one such justification.[23] Improved health has always been an important rationale for family planning, and from a humanitarian standpoint, health is clearly compelling. Nevertheless, in a period of tight budgets, this rationale may not be enthusiastically embraced if the health of people overseas is seen as taking precedence over domestic health problems. The compelling economic and foreign policy reasons for population assistance still need articulation in the contemporary context.

Thus, the international population and family planning community finds itself at a crossroads. Support by the United States—the largest single donor[24]—for population-related foreign assistance appears to have weakened. Doubters continue to dispute whether family planning programs have contributed significantly to the creation of demand for fertility control or have just satisfied already existing demand, but they have offered no alternatives to these programs. The giants among the leaders of the family planning movement have passed from the scene and, so, the field lacks a sense of direction and a set of agreed-upon goals. If there is supposed to be a golden age for family planning, this does not seem to be it. The international family planning movement carries on, but some of the momentum seems to have gone out of the enterprise.

## The Future

Projections by the United Nations portray a demographic future of high fertility and population growth, despite continuing increases in contraceptive use and continuing declines in fertility in every region.[25] The United Nations, for example, predicts an average decline of almost one child per woman in the total fertility rates of developing countries by the year 2000, and a corresponding increase of about 200 million married women in the number of contraceptive users. However, the estimated average TFR in the developing world will still be 3.2.

The likely reactions of national governments to changing demographic circumstances are difficult to predict. Enthusiasm for government support of fertility control will probably continue in most developing countries, but so too will a lingering conservative sentiment that questions the importance and appropriateness of organized government efforts to encourage women to limit the number of children they have. This ambivalence about the proper role of the state in the reproductive lives of its citizens stems from one of the fundamental dualities of the international family planning movement: The same programs that offer couples greater control over childbearing can, in altered circumstances, become the means by which fertility-related choices are restricted. Moreover, while the state has a legitimate interest in the rate of population growth, fertility is a deeply personal matter, subject to religious and community norms that discourage overly aggressive government programs.

Regardless of the country-specific details, three aspects of the future of fertility control merit special attention. First, we need to be more concerned about the supply of contraceptive commodities to developing-country family planning programs. Second, we must find new ways to maintain and strengthen the infrastructure needed for both family planning programs and population studies. Third, we need to continue to examine the policy implications of different family planning program strategies and different patterns of fertility and population growth for national development and individual well-being. These three priorities are as important for national policy-making groups and family planning programs as they are for the foreign assistance agencies of the United States and other donor countries and for the United Nations population agency.

- *Contraceptive commodities.* Between 1985 and 2000, according to UN population projections, the number of married women is likely to grow by over 50 percent in Africa, by almost 40 percent in Latin America, by about 25 percent in East Asia and by some 33 percent in South Asia. Fertility is predicted to decline by approximately 10 percent in Africa, and by of 30 percent in South Asia. These estimates imply a significant growth in contraceptive use and in the commodity supplies needed to support such use. The number of contraceptive users in Africa is projected to rise from 12 million in 1985 to 35 million in 2000, an increase of almost 200 percent. In Latin America, the number of users will increase by 75 percent, from 33 to 58 million; in East Asia, it will increase by about 30 percent, from 137 to 180 million; and in South Asia, by over 100 percent, from 87 million to 190 million women.[26]

While the total number of Third World couples practicing family planning is increasing, the international resources available per contraceptive user are declining and are sure to continue to fall. In addition, the price of contraceptive commodities is rising. Thus, more and more couples and countries will be faced with the problem of how to meet their contraceptive needs without external assistance. The problem of ensuring an adequate flow of contraceptives is becoming urgent because of anticipated shortfalls in a number of countries, and although this issue is increasingly being discussed,[27] detailed analysis of the implications of potential shortfalls has not started. Serious program planning and budgeting to guarantee a steady flow of contraceptive commodities is even further away.

Several aspects of this problem will not be well understood until additional data collection and research have been completed. For example, we have little understanding of how new methods will influence the price and availability of older methods. It is possible that in supporting the introduction of NORPLANT®, the new contraceptive implant, some developing-country governments may lessen support for other temporary methods. Other governments, of course, may decide for various reasons to back already available products such as the pill and the IUD in preference to NORPLANT. International donors may follow these or some other patterns.

A second, equally troublesome issue concerns the impact of subsidized contraceptive commodities on the private-sector market. A larger share of future users will have to depend on the private market to meet their contraceptive needs. How to strengthen the private market to increase its ability to supply contraceptives in developing countries is not clear, especially when contraceptive products are being sold by firms that may not be well equipped to supply, or indeed may not be even interested in supplying, developing-country markets. Major American and European firms will not market drugs destined only for developing countries. The almost exclusive reliance of developing-country family planning programs and many Third World users on publicly supplied contraceptive commodities has probably weakened the private market for contraceptives and lessened its ability to meet future needs; many private companies do not wish to compete with government-supplied products and therefore do not enter the market. More thoughtful research is needed before the dynamics of this process are fully understood and national governments and international donors are able to formulate appropriate policy responses. We also need to learn about the pros and cons of local manufacture and to carefully evaluate the experience of countries such as Indonesia, where local manufacture of contraceptives has been tried.

- *Infrastructure.* A second cluster of issues that will help shape the demographic future and that need more attention relate to the infrastructure needed to support family planning programs. In this context, infrastructure involves not just the physical facilities needed for the provision of services, but also both program evaluation and research and training in the broader area of population studies, which are sometimes ignored. For example, almost all research on the determinants of contraceptive use has examined institutional and individual characteristics, but not such factors as the role of experts or advocates in the evolution of family planning policy and service provision in the developing world. The field experience of many professionals suggests that individual leaders have been extremely important in the evolution of population policies and programs. During the 1960s and 1970s, for example, a small group of demographers trained at the University of Chicago exercised significant influence over the direction of national population policy and the conduct of family planning programs in Asia. Lee Jay Cho in Korea, Mercedes Concepcion in the Philippines, Visid Prachuabmoh in Thailand and Haryono Suyono in Indonesia played decisive roles in the development of population research and training, as well as in the promotion and improvement of family planning programs in their countries.

A great deal of training and technical assistance was required to enable the countries of Asia to develop strong indigenous population research programs. Much of that support, especially during the early years of family planning in Asia, was provided by the Agency for International Development and The Population Council through cooperative programs at American universities. Those programs have declined in importance. They will need to be revived (or alternatives developed) if both family planning programs and population studies are to become stronger in the countries, especially those in Africa, where they are not yet well established.

There are still a number of countries in tropical Africa about which we know little or nothing demographically, and there are subpopulations within almost every country in the region whose demographic behavior remains largely a mystery. If developing countries are to assemble the data and analyses necessary not only for the provision of needed health and family planning services but also for the whole range of planning exercises that are key to their modernization efforts, more support must be provided for data collection and analysis. Laptop computers and other new technology may be easing the burden of fieldwork somewhat, but they are no substitute for the trained professionals essential for the design, direction and analysis of censuses and demographic surveys, and for the reporting of their results.

Investments in human resources are also sure avenues for helping family planning programs develop. A new generation of operations research studies are pointing out the crucial role played by program managers and national bureaucrats in the design and implementation of successful family planning programs.[28] If these officials are to understand the issues they face and the alternatives available for addressing them, they must be adequately trained. The older programs of Asia offer evidence on the significance of training, but very little of it is well-known. For example, many researchers are aware of the association between contraceptive acceptance and the density of fieldworkers in South Korea, but they have forgotten the Koreans' emphasis on training (a factor that also helps explain the country's economic modernization). During the early days of the Korean national family planning program, officials in the Ministry of Health and Social Affairs set out to visit every physician in the country to explain the government's new policies on the provision of family planning services.[29]

- *Population policy.* A third focus of future work must be on population and family planning policy. Many of the problems faced by the family planning movement—such as lack of political support and inadequate financial resources—result from the perception that population and family planning are fundamentally simple matters. In essence, they *are* simple matters: Populations cannot grow forever, and increasing use of fertility control seems an almost inevitable consequence of modernization. But focusing on these extremes does not shed much light on the day-to-day population issues faced by most developing countries and their citizens.

The consensus that the level and pattern of population growth are vital factors in the welfare of developing countries breaks down when one attempts to spell out exactly what such a view implies for specific sectors of the economy and the society and what the appropriate policy responses are. It is clear, for example, that some institutional arrangements can help mitigate the negative consequences of rapid population growth. In the case of the environment, say, sound management of common property can lessen the impact of growth on resource depletion. However, it is far less certain what policy levers are available for countries that are unsure of the ability of existing (often very weak) institutions and markets to deal with the negative effects of population growth.

Scholars used to argue that the national characteristics of a society determine how fast it is able to modernize. Now, it seems clear that a country's place in the world system also plays an important role in shaping its economic and demographic future. As unsure as we are of the relationships between local population growth and, say, the depletion of natural resources or national savings rates, we know even less about the impact that high levels of foreign investment can have on fertility behavior. But a growing body of literature suggests that this relationship may be far more important than most of us believe.[30] Clearly, many of the determinants and consequences of fertility are not well understood and should be studied. Researchers and policymakers must learn from a broad range of topics, not just follow parochial interests.

It is particularly important to evaluate the consequences of fertility change for individuals and families. In countries such as South Korea and Thailand, fertility has declined substantially over the past two decades; we need to know a great deal more about the Korean and Thai couples who are now middle-aged and who controlled their fertility throughout their reproductive lives. Are they and their children happier, more prosperous, healthier and better adjusted than were their higher fertility counterparts of the preceding generation?

## Conclusions

One's views of the demographic and family planning changes that have taken place over the past 20 years depend on one's starting point. Rapid population growth has not had the devastating impact people feared. Moreover, while levels of fertility and population growth have remained high in many developing countries, they have declined in numerous others. Family planning programs have aided this process. Although only a few programs have been as successful as some early enthusiasts argued they would be, many other programs have been far more effective and well accepted than their critics of 20 years ago thought possible. Moreover, most of these programs have steadily improved in coverage, cost-effectiveness, quality of care and respect for human values.

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# The Politics of Birth Control

*By Jeannie I. Rosoff*

**Summary**

By the time Senate subcommittee hearings on the "population crisis" ended in 1968, a sizeable consensus had begun to emerge favoring government support of voluntary family planning programs at home and abroad. The goal to develop a national family planning program was easier to set than to accomplish, however, and there have been no lack of difficult questions to haggle over in the past 20 years.

Beginning with the Johnson administration, the executive branch of government has tended to favor block-grant funding of family planning services, while Congress has insisted on categorical funding. Conflict has also existed over financial eligibility for government-supported services, over whether teenagers and unmarried women should be served in publicly supported clinics and over which services should be included in the definition of family planning. The Reagan administration has exacerbated the conflicts with attempts to redefine family planning by placing primary emphasis on natural methods and abstinence for those who wish to prevent pregnancy and attempts to deny funding to both domestic and foreign programs that support access to abortion.

While future government support for family planning programs does not seem seriously threatened, funding has not grown in 15 years, once the effects of inflation are taken into account, and most programs have had to limit eligibility to survive. The Bush administration is unlikely to be as confrontational as the Reagan administration on the subject of family planning, but the political reality is that conflict can be expected to continue.

## In the Beginning

On February 1, 1968, Alaska's Senator Ernest Gruening, chairman of the Subcommittee on Foreign Aid Operations, brought to a close the last of 32 hearings on the "population crisis." The hearings were an odyssey that had stretched over almost three years. During that time, the subcommittee heard 120 witnesses, including heads of state, members of Congress, physicians, demographers, social workers and housewives. Their testimony, charts, projections and documentation filled 6,800 printed pages.

The hearings ostensibly dealt with what Senator Gruening called a "very mild, tentative and exploratory" proposal designed to enable the executive branch of the U.S. Government to "more effectively deal with rapid population growth throughout the world and the problems arising from such growth."[1] At their close, however, he called for the creation of assistant secretaries for population affairs in both the domestic health and foreign assistance sides of the U.S. government.

For decades, steadfast opposition from the Catholic Church had assured that federal action on birth control was taboo, so much so that Senator Gruening later said that his sponsorship of such legislation had "caused friends to warn me solicitously that I had committed political suicide."[2] In proposing it, the senator recalled his own concern as a medical student in 1909, and later as a journalist, about the tragic consequences for women, children and families of the lack of contraceptive availability and of the religious and social taboos concerning birth control. He added that public concern had assumed a much wider scope and now included "the increase in the world's population, which threatens to engulf every society. Not just the food supply which troubled Malthus, but the sufficiency of every natural resource, the concomitant menace of pollution of air, water and land, and the staggering incubus of waste disposal, are now at issue."[3]

In fact, by 1968, it had been more or less agreed upon that family planning and population were appropriate matters for government concern and action. The ground had been prepared by repeated statements from President John F. Kennedy and, particularly, from President Lyndon B. Johnson, who spoke of the need to address these issues no less than 40 times during his tenure, including at least twice in his State of the Union addresses. During his presidency, Dwight D. Eisenhower had declared that action on birth control and population matters were not a "proper function of Government;"[4] he later reversed his position and served with former President Harry S. Truman, as an honorary cochairman of Planned Parenthood.

Gruening's proposal itself was never brought to the Senate floor, largely because of administration resistance to the creation of new high-level government departments; but the hearings, and the attention they received in the media, helped develop public consensus behind other legislation that was to shape U.S. family planning programs at home and abroad. That consensus still exists. At the same time, however, the hearings exposed conflicts and contradictions that linger 20 years later. At issue are several types of questions:

- What government entities should administer family planning programs, and how much priority and, therefore, how much money should be allocated for them?
- Should only the very poor be served by these government-subsidized family planning programs, or should all those who might need help for various reasons be served?
- Should unmarried women and teenagers be eligible, and if so, under what conditions?
- What is the appropriate definition of family planning services, and for which of the components are federal subsidies appropriate?
- Finally, should some agencies, although experienced in providing family planning services, be denied federal funds if their position regarding services differs from the federal definition?

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### A Consensus Emerges

At the Gruening hearings, concern about worldwide population growth, particularly in the less-developed countries, was joined with concern about the growth of the domestic population, although the U.S. baby boom had actually ended nearly 10 years earlier. There were witnesses who argued that environmental problems—from crowding of the U.S. national parks to the erosion of the Sahel—were almost entirely due to explosive population growth. Others argued that large individual families were the root cause of poverty and, perhaps, even of crime. Some justified limitations on the number and spacing of births by their ascribed benefits to maternal and child health; others argued that the achievement of women's full development and autonomy demanded the wide availability of birth control. Still others cited equity and social justice as sufficient grounds.[5]

There were dissenting voices. The Catholic Church argued that economic development, social justice and support of traditional family structures would take care of the problem of rapid population growth and poverty. Church representatives said that the government should pursue "a policy of strict neutrality" and that "public power and public funds should not be used for the providing of birth control services."[6] Beyond the Church's opposition to the support of, from its point of view, inherently immoral practices, the Catholic hierarchy argued that family limitation and childspacing could be achieved through means other than contraception and that approval of contraceptive services would lead, via the proverbial "slippery slope," to sterilization and abortion. Secondly, they argued that governmental support of family planning services for the poor posed "serious dangers to civil liberty" and would lead inevitably to "coercion . . . and violations of human privacy." More specifically, the Church representatives said, ". . . no one asserts that it is the intention of the proponents [of the Gruening population proposal] to limit the production of American Negro offspring [but] no one can doubt that this will result if large-scale programs of government-supported birth control realize their intended goals."[7]

Martin Luther King, Jr., an early recipient of Planned Parenthood's Margaret Sanger award, and members of the Congressional Black Caucus were firm proponents of government-supported family planning programs. But, coming as it did at the height of the Black Power movement and after King's assassination, the Church's testimony was a potent argument. Furthermore, some black leaders viewed an increase in the number of blacks as key to their exercise of political power and, eventually, to their overcoming of racial discrimination. They argued that the intent of the government in providing birth control services to the poor and minorities could only be prompted by a desire to keep down their numbers and was, therefore, a form of genocide.[8]

The threat of coercion was given credibility by some population activists who argued that voluntary family planning programs would not work or would not work fast enough to curb overly rapid population growth. In this view, people's inherent desire for children would lead to continuous and explosive growth if not restrained by government pressure.[9]

Despite these differing points of view, a sizeable consensus had begun to emerge favoring government support of voluntary family planning programs at home and abroad. Some measures that had become law in 1967 were grounded in voluntary participation with an emphasis on economic development, the alleviation of individual poverty, the improvement of the health of women and children and the well-being of the family. These measures included the earmarking of humanitarian assistance funds for family planning and population programs under the Foreign Assistance Act, the designation of family planning for particular emphasis in the War on Poverty, the allocation to family planning of a minimum of six percent of all funds appropriated yearly for Maternal and Child Health and Crippled Children's programs, and the requirement that all states offer these services in "all appropriate cases" to recipients of public assistance.[10] Title X of the Public Health Service Act, enacted in 1970, went even further. It called for the provision of services to all persons who, for whatever reason, might not be able to obtain them otherwise.[11]

Implicit in Title X was the notion that access to family planning services was a matter of universal entitlement. In fact, at the 1974 United Nations Conference on Population held in Bucharest, the United States championed and the Conference recognized family planning as a basic human right for which governments had the responsibility to provide the means to exercise. The declaration was passed with only the Vatican and China abstaining.

Far from encouraging or even tolerating policies that went beyond voluntary family planning, public reaction to actual or potential coercive measures has been swift and definitive. In response to reported instances of sterilizations performed without the fully informed consent of indigent women, stringent federal requirements for consent were adopted in 1978. Indeed, overreaction to unauthorized use of Depo-Provera among some poor clinic populations is probably what has prevented its approval by the U.S. Food and Drug Administration to this day, even though the licensing authorities of some 40 countries consider the drug safe and have approved its use. Similarly, the belief that the Chinese family planning program employed coercion to enforce its one-child policy resulted in the defunding of the United Nations Fund for Population Activities by the U.S. Agency for International Development in 1986.

### Whose Responsibility Is It?

If the question of voluntary participation in family planning programs was never a major issue in the United States, there was no lack of other difficult questions. The first was whether the provision of family planning services should be categorically funded by the federal government or whether the responsibility for providing services should be left to the state's discretion through block funding. In his July 1969 Message on Population Growth and the American Future, President Nixon called for specific measures to provide family planning services to the estimated five million low-income women of childbearing age in the United States: "It is my view that no American woman should be denied access to family planning assistance because of her economic condition. I believe, therefore, that we should establish *as a national goal* the provision of adequate family planning services within the next five years to all who want but cannot afford them. This we have the capacity to do." (Emphasis added.)[12]

The goal to develop a national family planning program to serve all poor women in need of services was easier to set than to accomplish. A couple of months before President Nixon's message, bills that would presumably have met the President's objectives were introduced in both houses of Congress with broad sponsorship. However, the administration first opposed the legislation, insisting that it had enough authority under existing health law to further its announced goals.

In 1966, President Johnson had also opposed an earlier, less ambitious bill on the grounds that categorical funding of

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*Conant MA, Spicer DW and Smith CD: "Herpes Simplex Virus Transmission: Condom Studies" SEX TRANSM DIS. 1984; 11:94-95*

*"Condoms Found Effective in Blocking Transmission of HTLV-III Virus" AM MED NEWS, Jan. 10, 1986; 29:46-47. [IN VITRO STUDY]*

*Katznelson S, Drew WL, and Mintz, L: "Efficacy of the Condom As A Barrier to the Transmission of Cytomegalovirus" J INFECT DIS., 1984; 150:155-157*

*Stone KM, Grimes DA and Magder LD: "Personal Protection Against Sexually Transmitted Diseases" AM J OBSTET-GYNECOL., July, 1986; 155 (1):180-188*

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programs was an unnecessarily artificial, rigid and wasteful way of dealing with health and social problems. The Johnson administration had proposed instead to fund a number of existing health programs under a block grant to the states and to allow the addition of new programs on mental retardation, arthritis, alcoholism, drug addiction and family planning at the states' discretion. It was dissatisfaction with this approach that had led first to the various family planning measures adopted in 1967 and then to the introduction of Title X in 1969. Title X called for substantial additional funds for the support of family planning services, for increased support of biological and social research related to human reproduction and for the development of new contraceptive methods. It also proposed the creation of administrative structures to guide and coordinate the various government population programs, vesting this role in an Office of Population Affairs within the Department of Health, Education and Welfare (DHEW, which was changed to DHHS—Department of Health and Human Services—in 1980), to be headed by an Assistant Secretary of Population Affairs. It was these latter provisions that were most adamantly opposed by the Nixon administration as interfering with the management of executive agencies. However, as congressional support gathered and momentum built, the White House resigned itself to the inevitable, and the President signed the measure—Title X of the Public Health Service Acts—in December 1970.

Following its landslide election victory in 1972, however, the Nixon administration opposed the renewal of Title X and proposed to merge grants for family planning services, as well as many other health programs, under yet another comprehensive health measure. The administration, anticipating the passage of its proposal for national health insurance, envisioned a gradual phasing out of grant programs, leaving it to the states to determine local needs and priorities. After two years of debate and several presidential vetoes, Congress succeeded in retaining most categorical programs, including family planning. By then, of course, the prospects of national health insurance (and of welfare reform, another 1972 Nixon initiative) had receded into temporary oblivion. The issue of block grants would not return until the election of Ronald Reagan as President in 1980; but even the Carter administration had leaned toward comprehensive rather than categorical programs.

The controversy over categorical versus comprehensive or integrated programs is a matter of philosophy. For some, health is indivisible and health programs should provide all that is necessary and mutually supportive to their clients. For others, each area, locality, state or nation is in the best position to define its own needs and priorities, and each administrator must be given great flexibility in meeting local mandates. Given the swirling and often acrimonious debates over family planning, abortion and services to minors, government officials have probably hoped that these issues would have a much lower profile in comprehensive programs and would, therefore, carry fewer political risks. Advocates of family planning, however, have argued convincingly that a low profile can be achieved only at the cost of a much reduced or virtually nonexistent level of activity.

Beyond these considerations, however, are some potent fiscal and administrative realities that have affected each successive administration. One such reality is the tremendous increase in the size and number of federal categorical health and social programs. Successive administrations have attempted to consolidate various grant programs into comprehensive packages—usually with a lower aggregate price tag—and to give the states more flexibility in administering these programs. Another daunting reality was the explosion of health care costs that followed the enactment of the Medicare and Medicaid programs in 1965 and that continues to this day. Because costs in entitlement programs have been difficult, perhaps impossible, to control, there has been considerable pressure to hold down spending in smaller health programs. As far back as 1972, President Nixon sought to impound funds appropriated for a variety of such programs, including a substantial increase in funds for family planning that he had earlier requested from Congress. Later, President Gerald Ford asked Congress to cut allocations for family planning and other programs by 20 percent, a cut that President Reagan was finally able to wrest from Congress in 1981.

### Who Should Be Eligible?

Closely tied to fiscal concerns, but with philosophical implications as well, was the issue of financial eligibility for government programs. Should services be aimed solely at the poor or should they be provided to all who might not have access to them, for whatever reason—lack of knowledge, geographical residence or age?

By definition, those family planning services that were part of the Johnson administration's War on Poverty and those that were offered to public assistance recipients were targeted at the poor. Under the Title X program, priority had to be given to persons from low-income families; however, there could be no restrictions or conditions based on the patient's income. Charges to patients who were not classified as poor according to federally defined standards were entirely left to the discretion of individual grantees.

Following the 1972 elections, the Nixon administration moved forcefully to curtail spending for health and social services, largely by trying to limit eligibility for services, including family planning, to the very poor. This led to another confrontation with Congress and an extended battle over new regulations for social services programs and over an administration requirement that health programs, including Title X, become self-sustaining.

To make clear that Congress opposed the Nixon and Ford administrations' attempts to limit eligibility for family planning services, both the House and the Senate issued reports opposing that approach when they reauthorized Title X in 1975. They reiterated that the Federal family planning effort must serve not only the poorest of the poor but also persons of marginal income for whom the cost of preventive services is a particular burden, as well as all persons who for economic or other reasons have difficulty in obtaining the services they need and want.[13] It was only in 1980 that new regulations issued by the DHHS addressed the issue. Those regulations, still in place, provide that a person with a family income of less than 100 percent of the federal poverty level cannot be charged for services; sliding fees are assessed between 100 and 250 percent of the standard, and patients with incomes of more than 250 percent of poverty are expected to pay the "reasonable cost" of the services rendered.[14]

## Teenagers and the Unmarried, Too?

While the debate over financial criteria for family planning services waxed and waned, contention grew more intense surrounding social criteria. The provision of services to minors without parental consent became a hotly contested policy issue. Social criteria had been a question since the inception of federally supported family planning programs: The guidelines for the War on Poverty's family planning services in 1965 specifically prohibited the provision of contraceptives to unmarried women; this administrative decision was overruled by Congress in 1966. In 1970, 19 states and the District of Columbia still required the woman to be of a specified minimum age, to have had at least one live birth and to be married or obtain parental consent in order to receive contraceptive services.[15] Almost three years earlier, Congress had specified that state public welfare agencies were to refer "in all appropriate cases" recipients of cash assistance for family planning services.[16] Because of the lingering restrictions, Congress passed a 1972 amendment to the Social Security Act requiring the provision of family planning services to all ". . . individuals of childbearing age (including minors who can be considered sexually active) . . . who desire such services and supplies."[17]

With the inception of the Title X program, federal regulations had provided that services would be made available without regard to age or marital status. Consequently, adolescents were always enrolled in Title X–funded clinics, and their numbers began to grow substantially in the mid- and late-1970s. They came to represent close to a third of total enrollment and were a very visible component of the program. Most teenage patients were of low income, but many came to the clinics because they did not feel they could go to their family physicians, could not or would not discuss their sexual activity with their parents and could not or would not ask them for money to obtain contraceptives.

The increase in sexual activity recorded among teenagers during the 1970s, the well-documented problem of teenage pregnancy and the mounting number of abortions coincided with the resurgence of religious fundamentalism and assured political confrontation over social issues. The major conflict occurred in 1978 when six bills sponsored by right-to-life forces were offered on the floor of the House. Several dealt with an issue that was to become part of the agenda of both the New Right and the Reagan Administration, namely the need to erect a wall of separation between abortion and family planning services. Another proposal was to require parental notification before a prescription drug or device could be provided to an unemancipated minor under 16.

Although all these proposals were rejected, neither the issue of parental consent nor that of the relationship between family planning and abortion services was destined to go away. In 1981, Congress amended Title X to require that "to the extent practical . . . clinics should encourage family participation in teenagers' decisions about contraception" but specified that such involvement was not "mandated."[18]

Some members of the Republican-dominated Senate were still not satisfied. They pressed for the radical transformation or even the abolition of Title X, and Senators Jeremiah Denton (R.-Alabama) and Hatch introduced their own alternative to it. Their measure—the Adolescent Pregnancy Prevention and Care Act, sometimes dubbed the Chastity Law because of its emphasis on the curtailment of teenage sexual activity—was finally adopted in 1981, not as an alternative, but along with a three-year extension of Title X. During a Senate-House confrontation over the issue, only a personal letter from the President, hand delivered to Senator Hatch during a last minute Senate-House conference, succeeded in breaking the logjam. The President's "Dear Orrin" sought to reassure the Utah senator that although the votes were not in place to defeat the Title X legislation, he would seek "to remedy some of the problems in the family planning program administratively."[19]

In 1982, President Reagan showed he was as good as his word. Claiming that it only intended to implement the requirement of the law to "encourage" family involvement, his administration proposed that all parents whose adolescent children visited a family planning clinic be notified. In spite of some 40,000 letters, countless resolutions from professional and civic groups and many protests from Congress opposing the proposal, regulations were promulgated a year later stipulating that the parent or guardian residing with the minor be notified by registered mail within 10 days following the minor's receipt of a birth control prescription from a clinic. Federal judges in New York and the District of Columbia, however, immediately barred the enforcement of these regulations, and they were never put into effect. The judges, declaring the administration's arguments "fatuous" or "mere sophistry," also rejected a proposal to make teenagers eligible for family planning services on the basis of family income rather than personal income on the grounds that such a condition would in effect require parental notification.[20] Since then, congressional policy on this matter—to encourage but not require parental involvement in minors' birth control decisions—has been restored and seems well established.

## What Is Family Planning?

As the representatives of the Catholic Church had pointed out to Senator Gruening during his population hearings, family limitation or childspacing can be achieved by natural family planning, contraceptive methods, sterilization, abortion or a combination of all four. These distinctions may have seemed irrelevant to Congress in the mid-1960s, since abortion was illegal in nearly all states and use of contraceptive sterilization in the general population was low. In the spate of federal family planning legislation enacted in 1967, we can safely assume that what Congress had in mind was only the provision of contraceptive methods, although the Senate discussion of the Title X legislation in 1970 spoke of "comprehensive, voluntary" family planning services. When the measure was considered by the House, Catholic lobbyists requested a clarification, and it was amended to state that Title X funds could not be used "in programs where abortion is a method of family planning." This amendment was accepted by the Senate in conference, and the conference report further declared that Title X funds could be used "only to support preventive family planning services, population research, infertility services and other related medical, information, and educational activities. The Conferees have ... prohibit[ed] the use of such funds for abortion."[21]

Most medical care provided to public assistance recipients and other medically indigent persons in the United States is paid for by Medicaid. Since Medicaid pays for "necessary medical services," usually defined by the individual physician, abortions began to get reimbursed under Medicaid after more than a dozen states legalized abortion or reformed their laws between 1967 and 1973; their provision was reimbursed even more widely after the Supreme Court decisions of 1973. Contraceptive sterilizations were also paid for under most Medicaid programs.

In 1972, Congress adopted amendments to the Social Security Act requiring the participating states to provide family planning services and supplies to all Medicaid-eligible persons who desired such services. In addition, Congress provided a preferential federal reimbursement rate of 90 percent of state expenditures for family planning services rather than the 50–83 percent rate normally available. Over the next few years, the states began to avail themselves of this favorable rate and, in the process, to provide their own definitions of family planning.

In 1974, the federal government made its first administrative attempt to define family planning with a proposed regulation that would have specifically excluded all induced abortions from the definition of family planning. In the controversy that ensued, however, the proposal was abandoned. Then in 1976, Congress legislated a prohibition on the use of Medicaid funds to pay for abortions. (It had banned the use of U.S. foreign assistance funds for abortion in 1974.) At that time, all states had been paying for some abortions with Medicaid funds, most classifying them under the rubric of family planning and claiming the higher federal reimbursement rate. In addition, all but Florida included contraceptive sterilization in their definition of family planning.

The federal government's de facto definition of family planning—contraception, contraceptive sterilization and infertility services—remained essentially unchanged for more than 10 years, until the Reagan administration proposed a radically different definition in September 1987. Under the new administrative regulations proposed for Title X, family planning services were ranked in the following order: "natural family planning methods, adoption, infertility services and general reproductive health care, abstinence and contraception."[22] Thus, while contraceptive services could be provided, they clearly would be secondary to other services in the administration's view. Natural family planning and abstinence would be the preferred means of family planning for those who wished to prevent pregnancy.

When read together with the administration's 1987 legislative proposal for Title X, the purpose of the new family planning definition was even clearer. In the proposed bill, the long-standing Title X requirement that all family planning projects provide "a broad range of acceptable and effective family planning methods and services" would have been dropped. The regulations, later modified slightly as the result of a storm of criticism, were nevertheless published as final in February 1988. They were promptly enjoined by the courts, litigation continues and their eventual fate is still undecided.

The new definition of family planning was only one of the significant departures from previous policy. The other was the intricate set of rules proposed in the aforesaid regulations to prohibit family planning programs from providing any information concerning abortion, even if requested by a patient, and to ban the awarding of Title X funds to any organization or program that provides referrals for abortion, provides information about abortion or its legality or provides abortions with its own funds. Such proposals had previously been made by the head of the Office of Population Affairs, a political appointee whose repeated insistence on them had eventually led the secretary of the DHHS to dismiss her for insubordination. While overruled by the White House, the DHHS secretary had based his actions on 17 years of legal and administrative interpretation of the Title X statute, spanning four presidencies. The interpretation that pregnant women must be provided with full information about their options had also been repeatedly reaffirmed by Congress, in reauthorizations of the Title X program, as well as in a number of legislative battles.

### The International Connection

In August 1984, at the second United Nations International Conference on Population held in Mexico City, the U.S. delegation startled the 149 participant nations by abandoning a position that the United States had aggressively championed for some 20 years: that the slowing of population growth is essential to economic development in the developing world. Instead, the delegation argued that free-market economies were the best response to overly rapid population growth. While it insisted that the Reagan administration was not withdrawing its support of family planning, the delegation announced that the United States would no longer fund any organization that had any connection, however remote, with abortion. The shift in the U.S. position appeared to be the major discordant note at the conference, which addressed, in measured terms, the issues of family planning education and services to "adolescent boys and girls"—preferably, but not necessarily, with parental involvement—and of illegal abortion, leaving the legality of abortion to the discretion of individual sovereign nations.

The first victim of the "Mexico City Policy" was the International Planned Parenthood Federation (IPPF). Although supported largely by funds contributed by various national governments, it was asked in December 1984 to acquiesce to the dictates of a single donor. IPPF declined to do so and lost some $12 million in funds from the U.S. Agency for International Development (AID). The second victim was the United Nations Fund for Population Activities, which was defunded by AID in 1986 following allegations that China's family planning program with its "one-child-per-family" goal is inherently coercive; China was one of 133 countries receiving funds from the United Nations fund.

U.S. organizations that support family planning programs in the developing countries, most of which are largely or entirely funded by AID, were forced to agree to the government's conditions or cease to function. However, a lawsuit filed in 1985 by DKT Memorial Fund, a New York–based organization and would-be applicant for AID funds, argued that the Mexico City policy abridged its First Amendment rights to free speech and association. Early in 1988, when the AID grant to the Planned Parenthood Federation of America (PPFA) came up for renewal, that organization also filed suit against AID. In both cases, Federal District Court judges enjoined the clauses and their implementation. The government has appealed, and while litigation continues, AID funding for the international programs of PPFA also continues.

## What of the Future?

For most of the past 20 years, the development and implementation of U.S. family planning policy at home and abroad have followed a rocky path. Slowly and painfully, however, some issues have been clarified, and many appear to be reasonably well settled. It is generally agreed that economic development in the less-developed countries of the world is closely tied to slower rates of population growth, that improvements in the health and well-being of women and children demand access to effective means of fertility control, that women's full participation in society requires that they be able to control their reproductive lives and, finally, that the availability and effective practice of contraception represents the only realistic alternative to both legal and illegal abortion. It is no longer seriously disputed that governments have a responsibility to ensure that their citizens have access to family planning services and that the U.S. government has, in this regard, a dual responsibility: to provide assistance to its own population as needed and to help other countries to do so as well.

The existence of domestic and international family planning programs does not seem seriously threatened. Through the vagaries of the last 20 years, continued support of a centrally directed family planning and population assistance program at AID and of a categorical family planning program in the DHHS illustrates the enduring congressional commitment to these endeavors, even when they have been seriously challenged by the executive branch. Congress's insistence that support for the network of family planning clinics across the country be kept out of block grants, despite repeated White House attempts to place them there, also testifies to the strength of that commitment.

Allocations to international and domestic family planning programs, however, have fallen far short of the growing need. After 15 years of continuing inflation, total funds allocated to Title X in fiscal year 1988 were almost exactly the amount called for by President Nixon in fiscal year 1973. Relatively few states have made contributions of their own to family planning programs, and whatever program growth has occurred has been through the increasingly stringent collection of patient fees. Thus, eligibility for services—a bone of contention between the executive branch and Congress through the 1970s—was resolved de facto in the 1980s, when programs found it necessary to limit the number of their nonpaying patients, as well as to abandon a number of educational and supportive activities. These cutbacks, of course, have applied to other social and health programs, too. It is also true that public programs that are constantly surrounded by controversy are likely to fare poorly in a situation where there is political competition over spending. Under such conditions, little thought or energy can be devoted to how best or most effectively to meet the goals for which these programs were established in the first place. Unfortunately, should controversy abate as certain social issues gradually are resolved, the escalating pressures on the budget are likely to preclude or make extremely difficult much in the way of program expansion in the foreseeable future.

Before the advent of the Reagan administration, consensus on several sensitive social issues had seemed apparent. For example, congressional policy that confidential services would be provided to teenagers had seemed settled before it was challenged by the DHHS in 1982. That policy has now been upheld in the courts, however, and does not seem in question anymore. Still unresolved are the issues of providing unbiased, objective counseling and referral for abortion and of whether programs that do make that information available are suitable federal grantees.

Throughout the history of U.S. family planning programs, both domestic and international, patients were assumed to have the right to objective information about health care alternatives, because without such information, they could not give fully informed consent or participate voluntarily. Health professionals were also assumed to have an ethical and professional responsibility to provide such information. Finally, while it was acknowledged that government was free to choose which activities it supported financially, nongovernmental entities were also thought to have that freedom with their own funds. These principles were occasionally challenged, but the Reagan administration turned them on their heads, with the issuance of the Mexico City policy in 1984 and with the publication of the new DHHS regulations in 1988. The executive branch, overlooking congressional policy and a number of court decisions, ruled then that essential freedoms of patients, professionals and private institutions could be withdrawn as a condition for receiving federal funds.

The continuing controversy about abortion has had a deleterious effect on family planning programs. In their attempt to discredit family planning programs, foes of legal abortion have purposefully stressed the often tenuous connection such programs have with abortion services or have attempted to paint them as hotbeds of prochoice activism. As a result, programs have had to be continuously on the defensive, particularly so in the Reagan years. The controversy has also served to isolate family planning programs and abortion services from the mainstream of health care policy in the United States and from the panoply of services related to reproduction—ranging from sex education to prenatal, maternal and infant care—to which they logically and programmatically belong. Yet, as frequently pointed out by the Institute of Medicine—most recently in its report, *Prenatal Care: Reaching Mothers, Reaching Infants*—a "deeper commitment to family planning services and education . . . is an obvious, essential first step in improving the outcome of pregnancy for women and their babies."[23]

Because of the fear that the inclusion of family planning services in a specific legislative proposal, however appropriate or needed, is sure to attract attacks from right-to-life and ultraconservative forces, there is considerable inclination on the part of legislators to avoid the topic altogether. A prime example occurred in 1988 with Senator Edward Kennedy's health insurance proposal, The Minimum Health Benefits for All Workers Act. It proposes coverage for all pregnancy-related care but omits altogether care related to pregnancy prevention or childspacing.[24]

Finally, another consequence of the abortion controversy has been its impact on a wide range of scientific developments related to reproduction and on the availability of new contraceptive technologies.

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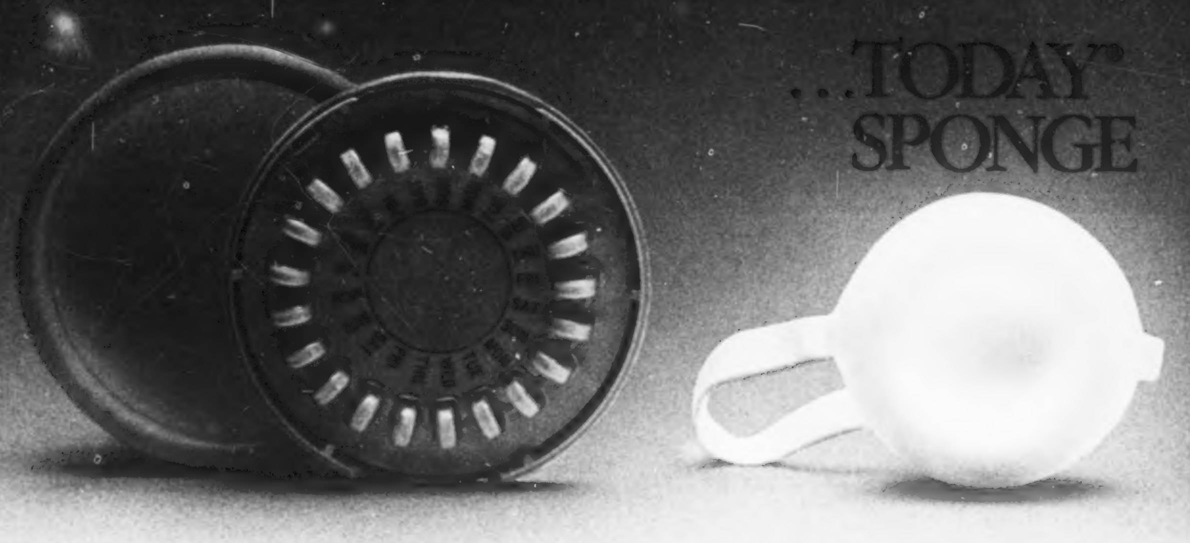
# [illegible] RANGE OF [illegible] CONTRACEPTIVE CHOICES



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* Women can expect an effectiveness rate of 89-91% if they use the TODAY SPONGE consistently and according to label instructions. In clinical trials including women who did not use the TODAY SPONGE consistently and properly, the effectiveness was 84-87%.

REFERENCES: 1. McClure DA, Edelman DA: Worldwide method effectiveness of the Today® vaginal contraceptive sponge. *Adv Contracept* 1:305-311, 1985. 2. *Today® Vaginal Contraceptive Sponge: A Technical Review*. Irvine, Calif, VLI Corporation, 1986.

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*(Continued from page 318)*

Any research that might potentially affect a fertilized ovum—from new contraceptive methods to in vitro fertilization—has come under attack. As a result, the United States has fallen behind other countries in the availability of new technologies that might reduce the need for abortion or improve its safety. Even federally supported research on treatment for such widespread and serious illnesses as diabetes and Parkinson's disease has been banned on the ground that the use of fetal tissue in such research might lead to greater public approval of abortion.

There are signs, however, that the situation may be changing. Recently, a task force for the National Institutes of Health tentatively approved the resumption of research involving fetal tissue, and the secretary of the DHHS proposed reconstituting an Ethics Advisory Committee, a body disbanded in 1980 largely because antiabortion forces had feared it would issue recommendations unacceptable to them. It seems doubtful, in addition, that the American public will remain quiescent for long about policies that, because of the opposition of isolated segments of the population, prevent promising new contraceptive methods from becoming available to the general public.

It seems unlikely that the Bush administration will prove to be as confrontational, in general and in regard to social issues specifically, as President Reagan has been. The times are different, the balance of power between Congress and the White House is different and the men themselves are different. However, some of the political forces that contributed to the nomination and election of President Reagan and President-elect Bush are still present. In the next four years, those forces will certainly attempt to parlay their political power into concessions on social issues and appointments to the Supreme Court.

Whether family planning and prochoice forces, along with segments of the American public and Congress who favor legal abortion but are concerned about its widespread utilization, will be able to mount positive initiatives that would result in a reduction in the incidence of unplanned pregnancy and, therefore, abortion, remains to be seen. In many countries where abortion is legal, the rates are far lower than in the United States, because abortion laws have been designed as part of comprehensive packages intended to reduce the demand for abortion by facilitating access to contraceptive methods, sex education and related health services. However, only a handful of U.S. states have launched even modest special initiatives to reduce the need for abortion. The defense of the status quo is the best that the United States as a whole has achieved to date. The result

*(Continued on page 297)*

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### "Population and Family Planning . . ."

*(Continued from page 311)*

The prospects for the next 20 years seem fairly clear. Most the women who will be having children during that time already have been born. It seems likely that they will grow up in an environment where fertility control is increasingly valued and available. It also seems likely that population growth will continue to decline in countries where it has already started to slow. Developments on the African continent are currently of special interest to demographers, and, predictably, they are at the center of the biggest disputes about the geographic future. Some countries, possibly Zimbabwe, and maybe Nigeria or Kenya, may launch national family planning programs of significant influence that, together with greater development, may lead to declines in fertility. Elsewhere, though, as in Chad or Malawi, the changes will be much slower and less dramatic. Continued attention to the consequences of demographic change is called for. We also need to try to understand and attempt to establish the demographic conditions that are most favorable to national development and advances in individual welfare.

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**Contraindications** 1. Known or suspected pregnancy (see Warning #5). 2. Thrombophlebitis or thromboembolic disorders. 3. Past history of deep vein thrombophlebitis or thromboembolic disorders. 4. Undiagnosed abnormal genital bleeding. 5. OCs should not be used by women who have or have had any of the following: a. cerebral vascular or coronary artery disease, including myocardial infarction; b. known or suspected carcinoma of the breast; c. known or suspected estrogen dependent neoplasia; d. benign or malignant liver tumor that developed during use of OCs or other estrogen containing products.

**WARNINGS. Cigarette smoking increases the risk of serious cardiovascular side effects from OC use. This risk increases with age and with heavy smoking (15 or more cigarettes per day) and is quite marked in women over 35 years of age. Women who use OCs should be strongly advised not to smoke.**

The use of OCs is associated with increased risk of several serious conditions including thromboembolism, stroke, myocardial infarction, liver tumor, gall bladder disease, visual disturbances, fetal abnormalities, and hypertension. Practitioners prescribing OCs should be familiar with the following information relating to these risks.

1. *Thromboembolic Disorders and Other Vascular Problems.* An increased risk of thromboembolic and thrombotic disease associated with OC use is established. One study demonstrated an increased relative risk for fatal venous thromboembolism and several studies demonstrated it for non-fatal venous thromboembolism. They estimate that OC users are 4-11 times more likely than nonusers to develop these diseases without evident cause. One British study reported an excess death rate of 40% in OC users, most of which resulted from cardiovascular disease. Another British study showed a lower death rate in OC users than controls; an increase in cardiovascular deaths was seen but was not statistically significant. A U.S. prospective study failed to disclose increased mortality rates from cardiovascular disorders, but a subset analyzed as a retrospective case-control study showed significant increases in venous thromboembolism. CEREBROVASCULAR DISORDERS. Two American studies demonstrated an increased relative risk for stroke not shown in prior British studies. In an American study of cerebrovascular disorders in women with and without predisposing causes, relative risk of hemorrhagic stroke was estimated as 2.0 times greater and thrombotic stroke as 4-9.5 times greater in users than nonusers. A British long-term follow-up study reported in 1976 a highly significant association between OC use and stroke. Another study had suggested an association in 1974, but the number of cases was too small to estimate the risk. Subarachnoid hemorrhage has been shown to be increased by OC use in British and American studies. Smoking alone increases incidence of these accidents; smoking and pill use appear to increase risk more than either alone.

MYOCARDIAL INFARCTION (MI). Increased relative risk of MI associated with OC use has been reported. One British study found that the greater the number of underlying risk factors for coronary artery disease (cigarette smoking, hypertension, hypercholesterolemia, obesity, diabetes, history of preeclamptic toxemia) the higher the risk of developing MI, regardless of OC use. OCs were an additional risk factor. In terms of relative risk, it has been estimated that nonsmoking OC users (smoking is considered a major predisposing condition to MI) are twice as likely to have a fatal MI as nonsmoking nonusers. OC users who are smokers have a 5-fold increased risk of fatal infarction compared to nonsmoking users, and a 10-12-fold increased risk compared to nonsmoking nonusers. The number of cigarettes smoked is important. In determining the importance of these relative risks, baseline rates for various age groups must be considered. (Estimates are based on British vital statistics which show acute MI death rates 2-3 times less than in the U.S., so U.S. death rates could be higher.) Importance of other predisposing conditions in determining relative and absolute risks has not been quantified; other synergistic actions may exist. RISK OF DOSE. Using data from several national adverse reaction reporting systems, British investigators concluded that risk of thromboembolism, including coronary thrombosis, is directly related to estrogen dose in OCs. OCs with 0.1 mg or more of estrogen were associated with a higher risk of thromboembolism than those containing 0.05-0.08 mg, but quantity of estrogen may not be the sole factor. This was supported by a U.S. study. A British study found a positive association between dose of progestogen or estrogen and certain thromboembolic conditions. Swedish authorities noted decreased reporting of thromboembolic episodes when higher estrogen preparations were no longer prescribed. Careful epidemiological studies to determine degree of thromboembolic disease risk associated with progestogen-only OCs have not been done. Thromboembolic disease has been reported in women using these products, and they should not be considered free of excess risk. PERSISTENCE OF RISK. Two studies have suggested an increased risk may persist for 6 years after discontinuation of OC use for cerebrovascular disease and 9 years for MI; another study suggested the persistence of risk for subarachnoid hemorrhage. ESTIMATE OF EXCESS MORTALITY FROM CIRCULATORY DISEASES. A large British prospective study estimated mortality rate per 100,000 women per year from circulatory system diseases for OC users and nonusers according to age, smoking habits, and duration of use. The overall annual excess death rate for OC users was estimated to be 20/100,000 (ages 15-34–5/100,000; ages 35-44–33/100,000; ages 45-49–140/100,000). Risk is concentrated in long-term users and in smokers, and may persist after OC discontinuation. Although the study showed a 10-fold increase in death due to circulatory diseases in users for 5 or more years, all occurred in women 35 or older. An update provided the following rates: ages 15-34–1/6700 for nonsmokers and 1/2000 for smokers; ages 45 and over–1/2500 for nonsmokers and 1/500 for smokers. Risk appeared to increase with parity but not with duration of use. Until more women under 35 with continuous use for 5 or more years are available, it is not possible to assess relative risk for this age group. Data from a variety of sources have been analyzed to estimate the risk of death associated with various methods of contraception. Estimates include combined risk of the contraceptive method (e.g., thromboembolic and thrombotic disease for OCs) plus risk attributable to pregnancy or abortion if the method fails (which varies with the effectiveness of the contraceptive method). The study concluded that mortality associated with all contraceptive methods is below that of childbirth, except for OCs in women over 40 who smoke. (Rates given for pill only smokers for each age are for smokers as a class. For "heavy" smokers (more than 15 cigarettes a day), the rates would be about double; for "light" smokers (less than 15), about half.) The lowest mortality is with the condom or diaphragm backed up by early abortion. The study also concluded that OC users who smoke, especially over 30, have greater mortality risk than OC users who do not smoke.

Risk of thromboembolic and thrombotic disease associated with OCs increases with age after 30 and for MI is further increased by hypertension, hyperlipidemias, obesity, diabetes, or history of preeclamptic toxemia, and especially by smoking. The following chart gives a gross estimate of risk of death from circulatory disorders associated with OC use.

SMOKING HABITS AND OTHER PREDISPOSING CONDITIONS–RISK ASSOCIATED WITH USE OF OCs

| Age | Below 30 | 30-39 | 40 + |
|---|---|---|---|
| Heavy smokers | C | B | A |
| Light smokers | D | C | B |
| Nonsmokers<br>(no predisposing conditions) | D | C,D | C |
| Nonsmokers<br>(other predisposing conditions) | C | C,B | B,A |

A – Use associated with very high risk
B – Use associated with high risk
C – Use associated with moderate risk
D – Use associated with low risk

Physician and patient should be alert to earliest manifestations of thromboembolic and thrombotic disorders (e.g., thrombophlebitis, pulmonary embolism, cerebrovascular insufficiency, coronary occlusion, retinal thrombosis, and mesenteric thrombosis). Should any of these occur or be suspected, discontinue OC immediately. A 4-6 fold increased risk of post-surgery thromboembolic complications has been reported in OC users. If feasible, discontinue OCs at least 4 weeks before surgery associated with increased risk of thromboembolism or prolonged immobilization. Before resuming OC after major surgery or bedrest, balance risks of post-surgery thromboembolic complications with contraceptive needs. Data suggest varicose veins substantially increase risk of superficial venous thrombosis of the leg, the risk depending on the severity of the varicosities. 2. *Ocular Lesions.* Neuro-ocular lesions such as optic neuritis or retinal thrombosis have been associated with OC use. Discontinue OC if there is unexplained, sudden or gradual, partial or complete loss of vision; onset of proptosis or diplopia; papilledema; or retinal vascular lesions; and institute appropriate diagnostic and therapeutic measures. 3. *Carcinoma.* Long-term continuous administration of natural or synthetic estrogen in certain animals increases certain tumors, benign or malignant, such as breast, cervix, vagina, uterus, ovary, pituitary and liver. Certain synthetic progestogens, none currently in OCs, increase the incidence of mammary nodules, benign and malignant, in dogs. Several retrospective case-control studies reported an increased relative risk (3.1-13.9 times) associating endometrial carcinoma with the prolonged use of estrogens in postmenopausal women. One publication reported the first 30 cases submitted to the registry of cases of adenocarcinoma of the endometrium in women under 40 on OCs. Of the adenocarcinomas found in women without predisposing risk factors for adenocarcinoma of the endometrium (e.g., irregular bleeding when OCs were first given, polycystic ovaries), nearly all occurred in women who had used sequential OCs, which are no longer marketed. No statistical association has been reported suggesting an increased risk of endometrial cancer in users of conventional combination or progestogen-only OCs, although individual cases have been reported. Studies have shown no increased risk of breast cancer to OC or estrogen users. One study found no overall increased risk of breast cancer in OC users but a greater risk was suggested for OC users with documented benign breast disease and for long-term (2-4 years) users. Another study found a history of breast cancer among grandmothers or aunts was significantly more frequent among breast cancer patients who had used an OC continuously for one or more years than among nonusers with breast cancer. One other study indicated an increasing risk of breast cancer in women taking menopausal estrogens, which increased with duration of follow-up. One author suggests that extended (over 6 years) OC use prior to first full term pregnancy was associated with a significant relative risk of breast cancer. A reduced occurrence of benign breast tumors in OC users has been well documented. One study reported malignant melanoma more frequently in OC users than controls and suggests an increased incidence of urinary tract and thyroid cancers. A prospective study of women with cervical dysplasia found an increase in severity and conversion to cancer *in situ* in OC users compared to nonusers. This became statistically significant after 3-4 years of use. Nonreversal of dysplasia within the first 6 months of pill use was suggested to predict progression after prolonged exposure. One study disclosed an increased risk of cancer of the cervix (largely carcinoma *in situ*) in OC users under 40, particularly those who had used OCs over 4 years. There have been other reports of microglandular hyperplasia of the cervix in OC users. One study reported an association between OC use and endocervical adenocarcinoma. In summary, there is no confirmed evidence from human studies of increased risk of cancer associated with OCs. Close clinical surveillance of all OC users is, nevertheless, essential. In all cases of undiagnosed persistent or recurrent abnormal vaginal bleeding, take appropriate diagnostic measures to rule out malignancy. Monitor OC users with a strong family history of breast cancer or who have breast nodules, fibrocystic disease or abnormal mammograms with particular care. 4. *Liver Tumors.* Sudden severe abdominal pain or shock may be due to rupture and hemorrhage of a liver tumor. There have been reports associating benign or malignant liver tumors with short-term and long-term OC use. One study reported use of OCs with high hormonal potency and age over 30 may further increase risk of hepatocellular adenoma. Two studies relate risk with duration of use, risk being much greater after 4 or more years of use. Long-term OC users have an estimated annual incidence of hepatocellular adenoma of 3-4/100,000. Although an uncommon lesion, it should be considered in women presenting with an "acute abdomen." The tumor may cause serious or fatal hemorrhage. Patients with liver tumors have demonstrated variable clinical features which may make preoperative diagnosis difficult. Some cases presented because of right upper quadrant masses, while most had signs and symptoms of acute intraperitoneal hemorrhage. Routine radiological and laboratory studies may not be helpful. Liver scans may show a focal defect. Hepatic arteriography may be useful in diagnosing primary liver neoplasm. 5. *Use in or Immediately Preceding Pregnancy, Birth Defects in Offspring, and Malignancy in Female Offspring.* Use of female sex hormones–estrogenic and progestational agents–during early pregnancy may seriously damage the offspring. Females exposed *in utero* to diethylstilbestrol, a nonsteroidal estrogen, have an increased risk of developing in later life a form of vaginal or cervical cancer that is ordinarily extremely rare. This risk has been estimated to be of the order of 1/1000 exposures or less. Although there is no evidence that OCs further enhance the risk of developing this type of malignancy, such OC users should be monitored with particular care. A high percentage of women exposed to diethylstilbestrol (30-90%) have epithelial changes of the vagina and cervix. Although these changes are histologically benign, it is not known whether they are a precursor of vaginal malignancy. Male children so exposed may develop urogenital tract abnormalities. Although similar data are not available on other estrogens, it cannot be presumed that they would not induce similar changes. Increased risk of congenital anomalies, including heart and limb defects, has been reported following use of sex hormones, including OCs, in pregnancy. One case-control study estimated a 4.7-fold increased relative risk of limb-reduction defects in infants exposed *in utero* to sex hormones (OCs, hormonal withdrawal tests for pregnancy or attempted treatment for threatened abortion). Some exposures involved only a few days of treatment. Data suggest risk of limb-reduction defects in exposed fetuses is somewhat less than 1/1000 live births. In a large prospective study, cardiovascular defects in children born to women who received female hormones, including OCs, during early pregnancy occurred at 18.2/1000 births, compared to 7.8/1000 for children not so exposed *in utero*. These results are statistically significant. A Welsh study found a statistically significant excess of neural tube defects among offspring of prior OC users (within 3 months) than among controls. The incidence of twin births may be increased for women who conceive shortly after discontinuing OC use. In the past, female sex hormones were used during pregnancy in an attempt to treat threatened or habitual abortion. There is evidence that estrogens are ineffective, and there is no evidence from well controlled studies that progestogens are effective for these uses. There is some evidence that triploidy and possibly other types of polyploidy are increased among abortuses from women who become pregnant soon after ceasing OCs. Embryos with these anomalies are virtually always aborted spontaneously. Whether there is an overall increase in spontaneous abortion of pregnancies conceived soon after stopping OCs is unknown. If the patient has not adhered to the prescribed schedule, consider possible pregnancy at the first missed period (or 45 days from the last menstrual period if progestogen-only OCs are used) and discontinue OC use until pregnancy has been ruled out. For any patient who has missed two consecutive periods, rule out pregnancy before continuing the OC. If pregnancy is confirmed, tell the patient about potential risks to the fetus and discuss advisability of continuing the pregnancy. Women who discontinue OCs to become pregnant should use an alternate form of contraception for a period of time before attempting to conceive. A 3-month period is supported by a study suggesting increased frequency of neural tube defects in women impregnated during the first 3 months after cessation of OC use. Do not use progestogen-only or progestogen-estrogen combinations to induce withdrawal bleeding as a pregnancy test. 6. *Gall Bladder Disease.* Studies report increased risk of gall bladder disease in OC or estrogen users. In one study, an increased risk appeared after 2 years of use and doubled after 4-5 years; in another study, an increased risk was apparent between 6 and 12 months. 7. *Carbohydrate and Lipid Metabolic Effects.* Because a decrease in glucose tolerance has been observed in a significant percentage of patients on OCs, prediabetic and diabetic OC users should be carefully observed. An increase in triglycerides and total phospholipids has been observed in OC users but its clinical significance is unknown. 8. *Elevated Blood Pressure.* An increase in blood pressure has been reported with OC use. Hypertension may occur within a few months of beginning OCs. In the first year of use, incidence of hypertension may be no higher in OC users than in nonusers. Incidence in users increases with exposure and in the fifth year of use is 2.5-3 times that in the first year. Age is strongly correlated with hypertension in OC users. Women with a history of elevated blood pressure (hypertension), preexisting renal disease, history of toxemia or elevated blood pressure during pregnancy, familial tendency to hypertension or its consequences," or history of excessive weight gain or fluid retention during the menstrual cycle may be more likely to develop elevated blood pressure when given OCs and should be monitored closely. Even though elevated blood pressure may remain within the "normal" range, closely watch elevations, particularly for women with other risk factors for cardiovascular disease or stroke. High blood pressure may or may not persist after OC discontinuation. 9. *Headache.* Discontinue OC and evaluate the cause of onset or exacerbation of migraine or development of a new pattern of headache which is recurrent, persistent, or severe. 10. *Bleeding Irregularities.* Breakthrough bleeding, spotting, and missed menses often make users discontinue OCs. In breakthrough bleeding, as in all cases of irregular bleeding from the vagina, consider nonfunctional causes. In undiagnosed persistent or recurrent abnormal bleeding from the vagina, use adequate diagnostic measures to rule out pregnancy or malignancy. If pathology has been excluded, time or another formulation may solve the problem. While potentially useful in minimizing menstrual irregularity, change to an OC with a higher estrogen content only if necessary since this may increase the risk of thromboembolic disease. Women with a history of oligomenorrhea or secondary amenorrhea or young women without regular cycles may tend to remain anovulatory or to become amenorrheic after OC discontinuation. Women with these preexisting problems should be advised of this and encouraged to use other contraceptive methods. Post-use anovulation, possibly prolonged, may occur in women without previous irregularities. A higher incidence of galactorrhea and of pituitary tumors (e.g., adenomas) has been associated with amenorrhea in former users compared with nonusers. One study reported a 16-fold increased incidence of pituitary prolactin-secreting tumors among patients with postpill amenorrhea when galactorrhea was present. 11. *Infertility.* There is evidence of impairment of fertility in women discontinuing OCs in comparison with other contraceptive methods, which appears to be independent of duration of use. While impairment diminishes with time, there is an appreciable difference in the results in nulliparous women for OC and other groups 30 months after discontinuation of birth control. For parous women the difference is not apparent 30 months after cessation of contraception. 12. *Ectopic Pregnancy.* Ectopic as well as intrauterine pregnancy may occur in OC failure. In progestogen-only OC failures, the ratio of ectopic to intrauterine pregnancies is higher than in nonusers, since the drugs are more effective in preventing intrauterine than ectopic pregnancies. 13. *Breast Feeding.* OCs in the postpartum period may interfere with lactation by decreasing quantity and quality of breast milk. A small fraction of OC hormonal agents has been identified in milk of mothers receiving OCs. Effects, if any, on the breast-fed child have not been determined. If feasible, defer OC use until the infant has been weaned.

**Precautions** *GENERAL.* 1. Take a complete medical and family history before starting OCs. Pretreatment and periodic physical exams should include special reference to blood pressure, breasts, abdomen and pelvic organs, including Papanicolaou smear and relevant lab tests. As a general rule, OCs should not be prescribed for longer than 1 year without another physical. 2. Under the influence of estrogen-progestogen preparations, preexisting uterine leiomyomata may enlarge. 3. Observe patients with a history of psychic depression and discontinue OCs if depression recurs to a serious degree. Patients becoming significantly depressed while taking OCs should stop the OC and use an alternate method of contraception to determine whether the symptom is drug related. 4. OCs may cause some fluid retention. Prescribe with caution, and only with careful monitoring, in patients with conditions that might be aggravated by fluid retention, such as convulsive disorders, migraine syndrome, asthma or cardiac, hepatic or renal insufficiency. 5. Patients with a past history of jaundice during pregnancy have an increased risk of recurrence while using OCs. Discontinue OC if jaundice develops. 6. Steroid hormones may be poorly metabolized in patients with impaired liver function and should be administered with caution in such patients. 7. OC users may have disturbances in normal tryptophan metabolism that may result in a relative pyridoxine deficiency. The clinical significance is unknown. 8. Serum folate levels may be depressed by OC use. Since the pregnant woman is predisposed to folate deficiency and incidence of folate deficiency increases with increasing gestation, if a woman becomes pregnant shortly after stopping OCs, she may have a greater chance of developing folate deficiency and related complications. 9. Advise the pathologist of OC use when relevant specimens are submitted. 10. Certain endocrine and liver function tests and blood components may be affected by estrogen-containing OCs. For example: a. Increased sulfobromophthalein retention. b. Increased prothrombin and factors VII, VIII, IX, and X; decreased antithrombin 3; increased norepinephrine-induced platelet aggregability. c. Increased thyroid binding globulin (TBG) leading to increased circulating total thyroid hormone, as measured by protein-bound iodine (PBI), T4 by column, or T4 by radioimmunoassay. Free T3 resin uptake is decreased, reflecting the elevated TBG; free T4 concentration is unaltered. d. Decreased pregnanediol excretion. e. Reduced response to metyrapone test. f. Increased phospholipids and triglycerides. g. Temporarily decreased glucose tolerance. 11. Contact lens wearers who develop visual changes or changes in lens tolerance should be assessed by an ophthalmologist and temporary or permanent cessation of wear considered. DRUG INTERACTIONS. OCs may be less effective and there may be increased breakthrough bleeding from interactions with rifampin, isoniazid, ampicillin, tetracycline, neomycin, penicillin V, chloramphenicol, sulfonamides, nitrofurantoin, barbiturates, phenytoin, primidone, analgesics, tranquilizers, antimigraine preparations, antihistamines, and griseofulvin. OCs may alter effectiveness of such other drugs as oral anticoagulants, anticonvulsants, tricyclic antidepressants, antihypertensive agents (e.g., guanethidine), vitamins, hypoglycemic agents, tranquilizers, hypnotic preparations, theophylline, and beta blockers. *CARCINOGENESIS* See Warnings. *PREGNANCY* Pregnancy category X. See Contraindications and Warnings. *NURSING MOTHERS* See Warnings.

**Adverse Reactions** An increased risk of the following serious adverse reactions has been associated with OC use (see Warnings): thrombophlebitis, thrombosis, pulmonary embolism, coronary thrombosis, cerebral thrombosis, mesenteric thrombosis, liver tumors, cerebral hemorrhage, hypertension, gall bladder disease, congenital anomalies, neuro-ocular lesions, e.g., retinal thrombosis and optic neuritis, Raynaud's disease, arterial thromboembolism. The following adverse reactions have been reported in OC users and are believed to be drug related: bleeding irregularities (breakthrough bleeding, spotting, missed menses during treatment, amenorrhea after treatment), gastrointestinal symptoms (nausea, vomiting, bloating, abdominal cramps, colitis), dysmenorrhea, infertility after discontinuance of treatment, edema, chloasma or melasma which may persist after drug is discontinued, breast changes (tenderness, enlargement, and secretion), intolerance to contact lenses, changes in corneal curvature (steepening), change in weight (increase or decrease), change in cervical erosion and cervical secretion, possible diminution of lactation when given immediately postpartum, cholestatic jaundice, migraine, increase in size of uterine leiomyomata, rash (allergic), mental depression, reduced tolerance to carbohydrates, vaginal candidiasis, prolactin-secreting pituitary tumors, chilblains. The following adverse reactions have been reported in OC users and the association has been neither confirmed nor refuted: premenstrual-like syndrome, cataracts, changes in libido, chorea, changes in appetite, cystitis-like syndrome, headache, nervousness, dizziness, hirsutism, loss of hair, erythema multiforme, erythema nodosum, hemorrhagic eruptions, vaginitis, porphyria, impaired renal function, malignant nephrosclerosis (hemolytic uremic syndrome), malignant hypertension, acute renal failure. **Information for the Patient** (See Patient Package insert.)

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**Exclusively for clinical and institutional prescribing: a redesigned, more convenient Memorette pill dispenser.**

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The new pill card features clear instructions to make proper sequencing simple and easy. For greater convenience, the pills are now labeled by days of the week, rather than by number.

Please see brief summary of full prescribing information on next page.

**TRI-NORINYL**

(NORETHINDRONE AND ETHINYL ESTRADIOL) TABLETS

TABLETS
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(Norethindrone and Ethinyl Estradiol)

TABLETS
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(Norethindrone and Mestranol)

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**NORINYL 1+50**
(Norethindrone and Mestranol)

TABLETS
**BREVICON**
(Norethindrone and Ethinyl Estradiol)

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Family Planning
# Perspectives
Volume 21, Number 1, January/February 1989

Using Direct Mail to Reach Teenage Males
Costs of Extended Medicaid Maternity Coverage

Fetal Research and the Politics of Abortion

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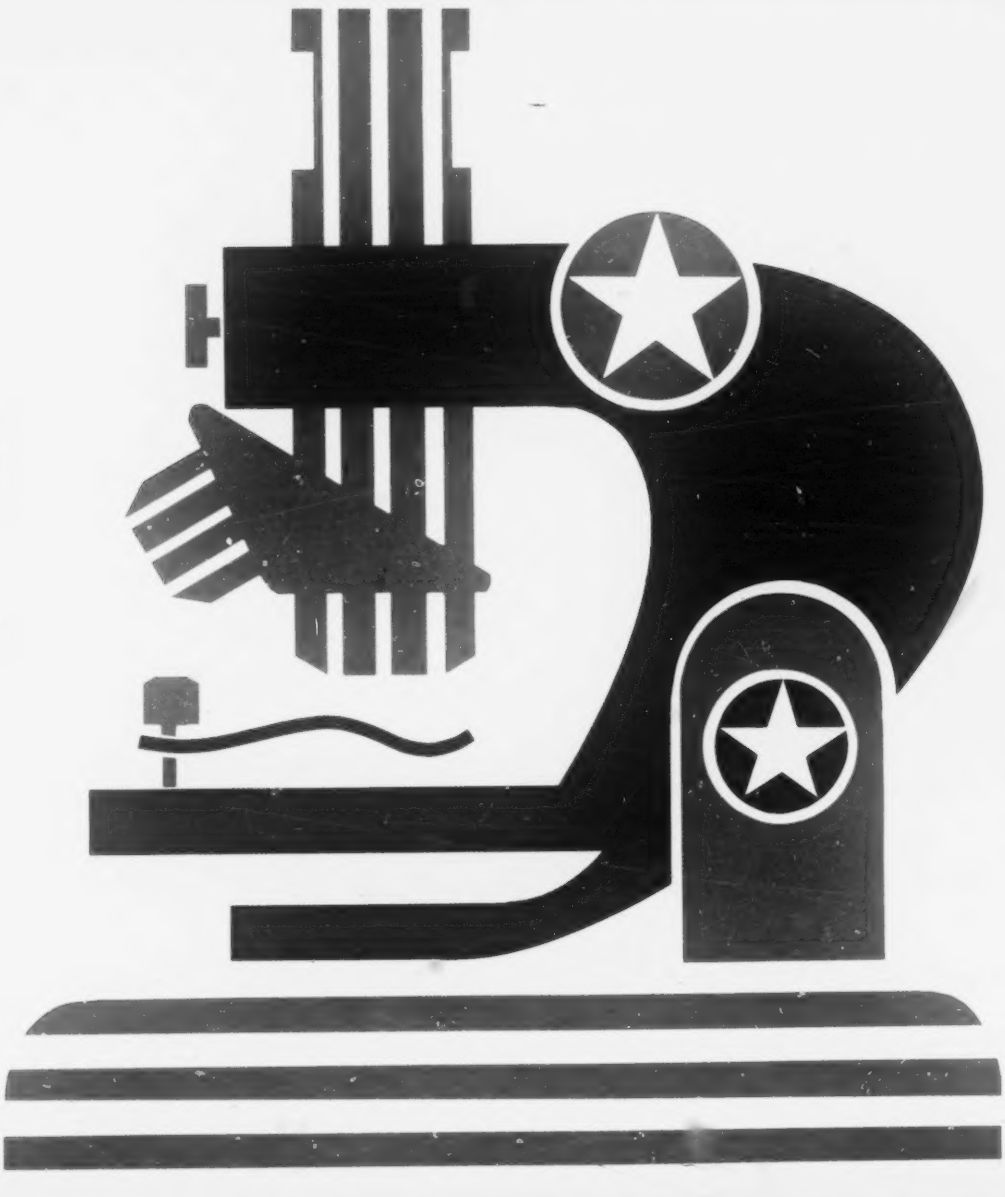

***It's revolutionary!***

# THE SMALLEST, SLEEKEST, MOST DISCREET OC PACKAGE EVER

## LOESTRIN® Fe

*(1.5mg norethindrone acetate and 30mcg ethinyl estradiol tablets, USP and 75mg ferrous fumarate tablets, USP)*

***Easy to use***
*Days of the week printed above tablet rows to simplify pill-taking*

***Portable***
*Unique "credit card" package slips into her wallet*

LOESTRIN® Fe 1.5/30
SAT
FRI
THU
WED
TUES
MON
(norethindrone acetate and ethinyl estradiol tablets, USP)
and ferrous fumarate tablets, USP)
PARKE-DAVIS

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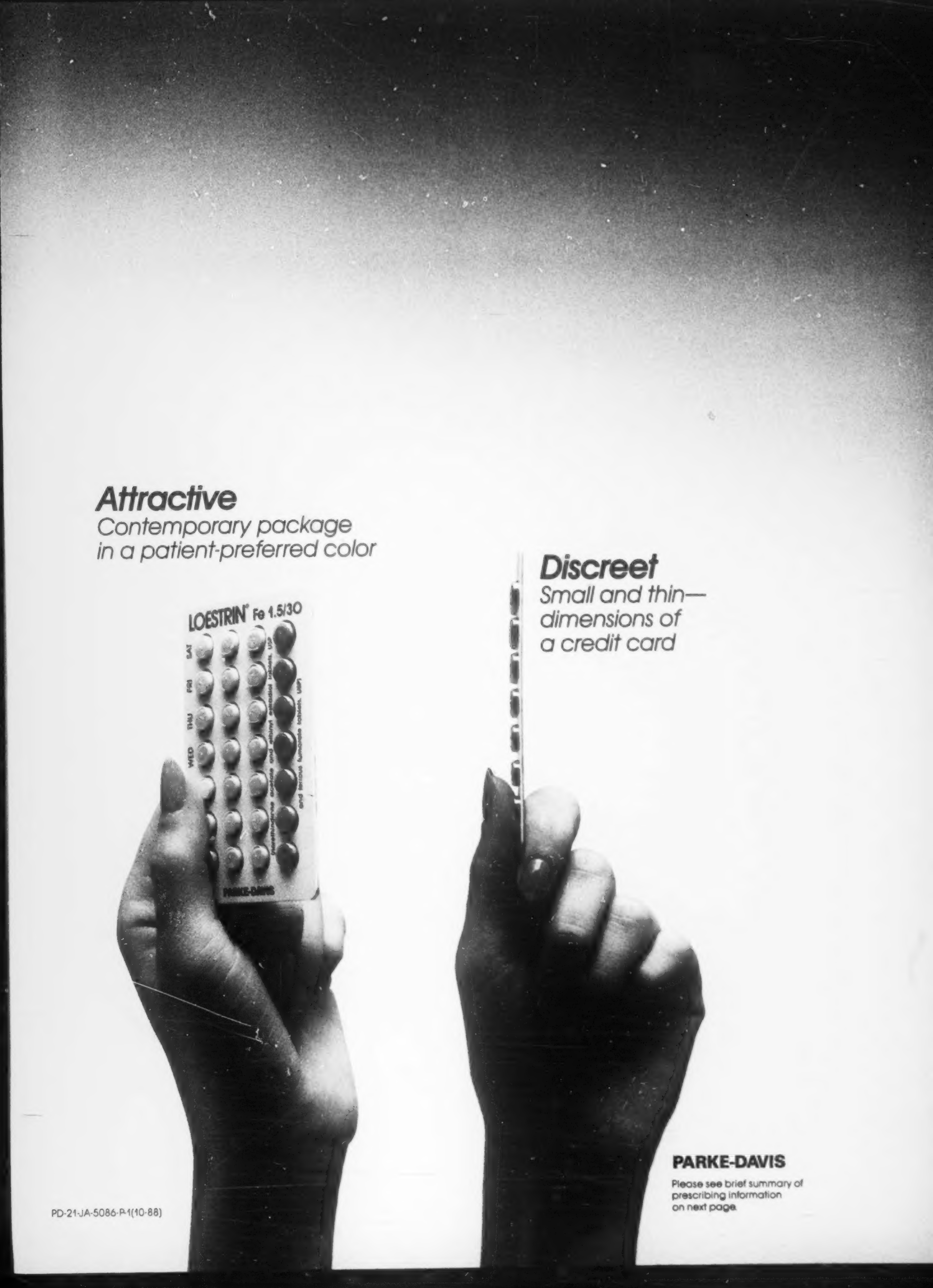
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(norethindrone acetate and ethinyl estradiol tablets, USP)
and ferrous fumarate tablets, USP
PARKE-DAVIS

**Attractive**
*Contemporary package in a patient-preferred color*

**Discreet**
*Small and thin—dimensions of a credit card*

**PARKE-DAVIS**

Please see brief summary of prescribing information on next page.

PD-21-JA-5086-P-1(10-88)

**LOESTRIN® 21**
(Norethindrone Acetate and Ethinyl Estradiol Tablets, USP)

**LOESTRIN® Fe**
(Norethindrone Acetate and Ethinyl Estradiol Tablets, USP and Ferrous Fumarate Tablets, USP)

**Before prescribing, please see full prescribing information. A Brief Summary follows:**
**INDICATIONS AND USAGE:** Loestrin 21 and Loestrin Fe are indicated for the prevention of pregnancy in women who elect to use oral contraceptives (OCs) as a method of contraception. **Dose-Related Risk of Thromboembolism from Oral Contraceptives:** Two studies have shown a positive association between the dose of estrogens in oral contraceptives and the risk of thromboembolism. For this reason, it is prudent and in keeping with good principles of therapeutics to minimize exposure to estrogen. The OC product prescribed for any given patient should be that product which contains the least amount of estrogen that is compatible with an acceptable pregnancy rate and patient acceptance. It is recommended that new acceptors of OCs be started on preparations containing 0.05 mg or less of estrogen. **CONTRAINDICATIONS:** OCs should not be used in women with any of the following conditions: 1. Thrombophlebitis or thromboembolic disorders. 2. A past history of deep vein thrombophlebitis or thromboembolic disorders. 3. Cerebral vascular or coronary artery disease. 4. Known or suspected carcinoma of the breast. 5. Known or suspected estrogen dependent neoplasia. 6. Undiagnosed abnormal genital bleeding. 7. Known or suspected pregnancy (see Warning No. 5). 8. Benign or malignant liver tumor which developed during the use of oral contraceptives or other estrogen containing products.

**WARNINGS**

**Cigarette smoking increases the risk of serious cardiovascular side effects from oral contraceptive use. This risk increases with age and with heavy smoking (15 or more cigarettes per day) and is quite marked in women over 35 years of age. Women who use oral contraceptives should be strongly advised not to smoke.**

The use of oral contraceptives is associated with increased risk of several serious conditions including thromboembolism, stroke, myocardial infarction, hepatic adenoma, gallbladder disease, and hypertension. Practitioners prescribing oral contraceptives should be familiar with the following information relating to these risks.

1. *Thromboembolic Disorders and Other Vascular Problems.* An increased risk of thromboembolic and thrombotic disease associated with the use of OCs is well established. Three principal studies in Great Britain and three in the United States have demonstrated an increased risk of fatal and nonfatal venous thromboembolism and stroke, both hemorrhagic and thrombotic. These studies estimate that users of OCs are 4 to 11 times more likely than nonusers to develop these diseases without evident cause. **Cerebrovascular Disorders:** In a collaborative American study of cerebrovascular disorders in women with and without predisposing causes, it was estimated that the risk of hemorrhagic stroke was 2.0 times greater in users than in nonusers and the risk of thrombotic stroke was 4 to 9.5 times greater in users than in nonusers. **Myocardial Infarction:** An increased risk of myocardial infarction associated with the use of OCs has been reported, confirming a previously suspected association. These studies, conducted in the United Kingdom, found, as expected, that the greater the number of underlying risk factors for coronary artery disease (cigarette smoking, hypertension, hypercholesterolemia, obesity, diabetes, history of preeclamptic toxemia), the higher the risk of developing myocardial infarction, regardless of whether the patient was an OC user or not. OCs, however, were found to be a clear additional risk factor. In terms of relative risk, it has been estimated that OC users who do not smoke (smoking is considered a major predisposing condition to myocardial infarction) are about twice as likely to have a fatal myocardial infarction as nonusers who do not smoke. OC users who are also smokers have about a 5-fold increased risk of fatal infarction compared to users who do not smoke, but about a 10- to 12-fold increased risk compared to nonusers who do not smoke. Furthermore, the amount of smoking is also an important factor. In determining the importance of these relative risks, however, the baseline rates for various age groups must be given serious consideration. The importance of other predisposing conditions mentioned above in determining relative and absolute risks has not as yet been quantified; it is quite likely that the same synergistic action exists, but perhaps to a lesser extent. **Risk of Dose:** In an analysis of data derived from several national adverse reaction reporting systems, British investigators concluded that the risk of thromboembolism, including coronary thrombosis, is directly related to the dose of estrogen used in oral contraceptives. Preparations containing 100 mcg or more of estrogen were associated with a higher risk of thromboembolism than those containing 50 to 80 mcg of estrogen. Their analysis did suggest, however, that the quantity of estrogen may not be the sole factor involved. This finding has been confirmed in the United States. Careful epidemiological studies to determine the degree of thromboembolic risk associated with progestogen only OCs have not been performed. Cases of thromboembolic disease have been reported in women using these products, and they should not be presumed to be free of excess risk. **Persistence of Risk:** In confirmation of earlier reports, two studies have suggested that an increased risk may persist for as long as 6 years after discontinuation of oral contraceptive use for cerebrovascular disease and 9 years for myocardial infarction. In addition, a prospective study suggested the persistence of risk for subarachnoid hemorrhage. **Estimate of Excess Mortality from Circulatory Diseases:** A large prospective study carried out in the U.K. estimated the mortality rate per 100,000 women per year from diseases of the circulatory system for users and nonusers of OCs according to age, smoking habits, and duration of use. The overall excess death rate annually from circulatory diseases for OC users was estimated to be 20 per 100,000 (ages 15 to 34 – 5/100,000; ages 35 to 44 – 33/100,000; ages 45 to 49 – 140/100,000), the risk being concentrated in older women, in those with a long duration of use, and in cigarette smokers. It was not possible, however, to examine the interrelationships of age, smoking, and duration of use, nor to compare the effects of continuous versus intermittent use. Although the study showed a 10-fold increase in death due to circulatory diseases in users for 5 or more years, all of these deaths occurred in women 35 or older. Until larger numbers of women under 35 with continuous use for 5 or more years are available, it is not possible to assess the magnitude of the relative risk for this younger age group. The available data from a variety of sources have been analyzed to estimate the risk of death associated with various methods of contraception. The estimates of risk of death for each method include the combined risk of the contraceptive method (eg, thromboembolic and thrombotic disease in the case of oral contraceptives) plus the risk attributable to pregnancy or abortion in the event of method failure. This latter risk varies with the effectiveness of the contraceptive method. The study concluded that the mortality associated with all methods of birth control is low and below that associated with childbirth, with the exception of OCs in women over 40 who smoke. (The rates given for pill only/smokers for each age group are for smokers as a class. For "heavy" smokers [more than 15 cigarettes a day] the rates given would be about double; for "light" smokers [less than 15 cigarettes a day] about 50 percent.) The lowest mortality is associated with the condom or diaphragm backed up by early abortion. The risk of thromboembolic and thrombotic disease associated with OCs increases with age after approximately age 30 and, for myocardial infarction, is further increased by hypertension, hypercholesterolemia, obesity, diabetes, or history of preeclamptic toxemia and especially by cigarette smoking. The physician and the patient should be alert to the earliest manifestations of thromboembolic and thrombotic disorders (eg, thrombophlebitis, pulmonary embolism, cerebrovascular insufficiency, coronary occlusion, retinal thrombosis, and mesenteric thrombosis). Should any of these occur or be suspected, the drug should be discontinued immediately. A four- to six-fold increased risk of postsurgery thromboembolic complications has been reported in OC users. If feasible, OCs should be discontinued at least 4 weeks before surgery of a type associated with an increased risk of thromboembolism or prolonged immobilization. 2. *Ocular Lesions.* There have been reports of neuro ocular lesions, such as optic neuritis or retinal thrombosis, associated with the use of OCs. Discontinue OC medication if there is unexplained, sudden or gradual, partial or complete loss of vision; onset of proptosis or diplopia; papilledema; or retinal vascular lesions, and institute appropriate diagnostic and therapeutic measures. 3. *Carcinoma.* Long term continuous administration of either natural or synthetic estrogen in certain animal species increases the frequency of carcinoma of the breast, cervix, vagina, and liver. Certain synthetic progestogens, none currently contained in OCs, have been noted to increase the incidence of mammary nodules, benign and malignant, in dogs. In humans, three case control studies have reported an increased risk of endometrial carcinoma associated with the prolonged use of exogenous estrogen in postmenopausal women. One publication reported on the first 21 cases submitted by physicians to a registry of cases of adenocarcinoma of the endometrium in women under 40 on OCs. Of the cases found in women without predisposing risk factors for adenocarcinoma of the endometrium (eg, irregular bleeding at the time OCs were first given, polycystic ovaries), nearly all occurred in women who had used a sequential OC. These products are no longer marketed. No evidence has been reported suggesting an increased risk of endometrial cancer in users of conventional combination or progestogen only OCs. Several studies have found no increase in breast cancer in women taking OCs or estrogens. One study, however, while also noting no overall increased risk of breast cancer in women treated with OCs, found an excess risk in the subgroups of OC users with documented benign breast disease. A reduced occurrence of benign breast tumors in users of OCs has been well documented. In summary, there is at present no confirmed evidence from human studies of an increased risk of cancer associated with OCs. Close clinical surveillance of all women taking OCs is, nevertheless, essential. In all cases of undiagnosed persistent or recurrent abnormal vaginal bleeding, appropriate diagnostic measures should be taken to rule out malignancy. Women with a strong family history of breast cancer or who have breast nodules, fibrocystic disease, or abnormal mammograms should be monitored with particular care if they elect to use OCs instead of other methods of contraception. 4. *Hepatic Tumors.* Benign hepatic adenomas have been found to be associated with the use of OCs. One study showed that OC formulations with high hormonal potency were associated with a higher risk than lower potency formulations. Although benign, hepatic adenomas may rupture and may cause death through intra-abdominal hemorrhage. This has been reported in short term as well as long term users of OCs. Two studies relate risk with duration of use of the contraceptive, the risk being much greater after 4 or more years of OC use. While hepatic adenoma is a rare lesion, it should be considered in women presenting abdominal pain and tenderness, abdominal mass or shock. A few cases of hepatocellular carcinoma have been reported in women taking oral contraceptives. The relationship of these drugs to this type of malignancy is not known at this time. 5. *Use in or Immediately Preceding Pregnancy, Birth Defects in Offspring, and Malignancy in Female Offspring.* The use of female sex hormones – both estrogenic and progestational agents – during early pregnancy may seriously damage the offspring. It has been shown that females exposed *in utero* to diethylstilbestrol, a nonsteroidal estrogen, have an increased risk of developing in later life a form of vaginal or cervical cancer that is ordinarily extremely rare. This risk has been estimated to be of the order of 1 in 1,000 exposures or less. Although there is no evidence at the present time that OCs further enhance the risk of developing this type of malignancy, such patients should be monitored with particular care if they elect to use OCs instead of other methods of contraception. Furthermore, a high percentage of such exposed women (from 30% to 90%) have been found to have epithelial changes of the vagina and cervix. Although these changes are histologically benign, it is not known whether this condition is a precursor of vaginal malignancy. Male children so exposed may develop abnormalities of the urogenital tract. Although similar data are not available with the use of other estrogens, it cannot be presumed that they would not induce similar changes. An increased risk of congenital anomalies, including heart defects and limb defects, has been reported with the use of sex hormones, including OCs, in pregnancy. One case control study has estimated a 4.7-fold increase in risk of limb reduction defects in infants exposed *in utero* to sex hormones (OCs, hormonal withdrawal tests for pregnancy or attempted treatment for threatened abortion). Some of these exposures were very short and involved only a few days of treatment. The data suggest that the risk of limb reduction defects in exposed fetuses is somewhat less than 1 in 1,000 live births. In the past, female sex hormones have been used during pregnancy in an attempt to treat threatened or habitual abortion. There is considerable evidence that estrogens are ineffective for these indications, and there is no evidence from well controlled studies that progestogens are effective for these uses. There is some evidence that triploidy and possibly other types of polyploidy are increased among abortuses from women who become pregnant soon after ceasing OCs. Embryos with these anomalies are virtually always aborted spontaneously. Whether there is an overall increase in spontaneous abortion of pregnancies conceived soon after stopping OCs is unknown. It is recommended that for any patient who has missed two consecutive periods, pregnancy should be ruled out before continuing the contraceptive regimen. If the patient has not adhered to the prescribed schedule, the possibility of pregnancy should be considered at the time of the first missed period, and further use of OCs should be withheld until pregnancy has been ruled out. If pregnancy is confirmed, the patient should be apprised of the potential risks to the fetus and the advisability of continuation of the pregnancy should be discussed in the light of these risks. It is also recommended that women who discontinue oral contraceptives with the intent of becoming pregnant use an alternate form of contraception for a period of time before attempting to conceive. Many clinicians recommend 3 months although no precise information is available on which to base this recommendation. The administration of progestogen only or progestogen estrogen combinations to induce withdrawal bleeding should not be used as a test of pregnancy. 6. *Gallbladder Disease.* Studies report an increased risk of surgically confirmed gallbladder disease in users of OCs and estrogens. In one study, an increased risk appeared after 2 years of use and doubled after 4 or 5 years of use. In one of the other studies, an increased risk was apparent between 6 and 12 months of use. 7. *Carbohydrate and Lipid Metabolic Effects.* A decrease in glucose tolerance has been observed in a significant percentage of patients on OCs. For this reason, prediabetic and diabetic patients should be carefully observed while receiving OCs. An increase in triglycerides and total phospholipids has been observed in patients receiving OCs. The clinical significance of this finding remains to be defined. 8. *Elevated Blood Pressure.* An increase in blood pressure has been reported in patients receiving OCs. In some women, hypertension may occur within a few months of beginning OC use. In the first year of use, the prevalence of women with hypertension is low in users and may be no higher than that of a comparable group of nonusers. The prevalence in users increases, however, with longer exposure, and in the fifth year of use is two and a half to three times the reported prevalence in the first year. Age is also strongly correlated with the development of hypertension in OC users. Women who previously have had hypertension during pregnancy may be more likely to develop elevation of blood pressure when given OCs. Hypertension that develops as a result of taking OCs usually returns to normal after discontinuing the drug. 9. *Headache.* The onset or exacerbation of migraine or development of headache of a new pattern which is recurrent, persistent, or severe, requires discontinuation of OCs and evaluation of the cause. 10. *Bleeding Irregularities.* Breakthrough bleeding, spotting, and amenorrhea are frequent reasons for patients discontinuing OCs. In breakthrough bleeding, as in all cases of irregular bleeding from the vagina, nonfunctional causes should be borne in mind. In undiagnosed persistent or recurrent abnormal bleeding from the vagina, adequate diagnostic measures are indicated to rule out pregnancy or malignancy. If pathology has been excluded, time or a change to another formulation may solve the problem. Changing to an OC with a higher estrogen content, while potentially useful in minimizing menstrual irregularity, should be done only if necessary since this may increase the risk of thromboembolic disease. Women with a past history of oligomenorrhea or secondary amenorrhea or young women without regular cycles may have a tendency to remain anovulatory or to become amenorrheic after discontinuation of OCs. Women with these preexisting problems should be advised of this possibility and encouraged to use other contraceptive methods. Post use anovulation, possibly prolonged, may also occur in women without previous irregularities. 11. *Ectopic Pregnancy.* Ectopic as well as intrauterine pregnancy may occur in contraceptive failures. However, in progestogen only OC failures, the ratio of ectopic to intrauterine pregnancies is higher than in women who are not receiving OCs, since the drugs are more effective in preventing intrauterine than ectopic pregnancies. 12. *Breast Feeding.* OCs given in the postpartum period may interfere with lactation. There may be a decrease in the quantity and quality of the breast milk. Furthermore, a small fraction of the hormonal agents in OCs has been identified in the milk of mothers receiving these drugs. The effects, if any, on the breast fed child have not been determined. If feasible, the use of OCs should be deferred until the infant has been weaned. **PRECAUTIONS: General:** 1. A complete medical and family history should be taken prior to the initiation of OCs. The pretreatment and periodic physical examinations should include special reference to blood pressure, breasts, abdomen and pelvic organs, including Papanicolaou smear and relevant laboratory tests. As a general rule, OCs should not be prescribed for longer than 1 year without another physical examination being performed. 2. Under the influence of estrogen progestogen preparations preexisting uterine leiomyomata may increase in size. 3. Patients with a history of psychic depression should be carefully observed and the drug discontinued if depression recurs to a serious degree. Patients becoming significantly depressed while taking OCs should stop the medication and use an alternate method of contraception in an attempt to determine whether the symptom is drug related. 4. OCs may cause some degree of fluid retention. They should be prescribed with caution, and only with careful monitoring, in patients with conditions which might be aggravated by fluid retention, such as convulsive disorders, migraine syndrome, asthma, or cardiac or renal insufficiency. 5. Patients with a past history of jaundice during pregnancy have an increased risk of recurrence of jaundice while receiving OC therapy. If jaundice develops in any patient receiving such drugs, the medication should be discontinued. 6. Steroid hormones may be poorly metabolized in patients with impaired liver function and should be administered with caution in such patients. 7. OC users may have disturbances in normal tryptophan metabolism which may result in a relative pyridoxine deficiency. The clinical significance of this is yet to be determined. 8. Serum folate levels may be depressed by OC therapy. Since the pregnant woman is predisposed to the development of folate deficiency and the incidence of folate deficiency increases with increasing gestation, it is possible that if a woman becomes pregnant shortly after stopping OCs, she may have a greater chance of developing folate deficiency and complications attributed to this deficiency. 9. The pathologist should be advised of OC therapy when relevant specimens are submitted. 10. Certain endocrine and liver function tests and blood components may be affected by estrogen-containing OCs: a. Increased sulfobromophthalein retention. b. Increased prothrombin and factors VII, VIII, IX, and X; decreased antithrombin 3; increased norepinephrine-induced platelet aggregability. c. Increased thyroid binding globulin (TBG) leading to increased circulating total thyroid hormone, as measured by protein bound iodine (PBI), T4 by column, or T4 by radioimmunoassay. Free T3 resin uptake is decreased, reflecting the elevated TBG; free T4 concentration is unaltered. d. Decreased pregnanediol excretion. e. Reduced response to metyrapone test. **INFORMATION FOR THE PATIENT:** See Patient Labeling. **DRUG INTERACTIONS:** Reduced efficacy and increased incidence of breakthrough bleeding have been associated with concomitant use of rifampin. A similar association has been suggested with barbiturates, phenylbutazone, phenytoin sodium, tetracycline, and ampicillin. **CARCINOGENESIS, PREGNANCY, NURSING MOTHERS:** See Contraindications and Warnings sections. **ADVERSE REACTIONS:** An increased risk of the following serious adverse reactions has been associated with the use of OCs (see Warnings): Thrombophlebitis, pulmonary embolism, coronary thrombosis, cerebral thrombosis, cerebral hemorrhage, hypertension, gallbladder disease, benign hepatomas, congenital anomalies. There is evidence of an association between the following conditions and the use of OCs, although additional confirmatory studies are needed: Mesenteric thrombosis, neuro ocular lesions, eg, retinal thrombosis and optic neuritis. The following adverse reactions have been reported in patients receiving OCs and are believed to be drug related: Nausea and/or vomiting, usually the most common adverse reactions, occur in approximately 10 percent or less of patients during the first cycle. Other reactions, as a general rule, are seen much less frequently or only occasionally: Gastrointestinal symptoms (such as abdominal cramps and bloating), breakthrough bleeding, spotting, change in menstrual flow, dysmenorrhea, amenorrhea during and after treatment, temporary infertility after discontinuance of treatment, edema, chloasma or melasma which may persist, breast changes: tenderness, enlargement and secretion, change in weight (increase or decrease), change in cervical erosion and cervical secretion, possible diminution in lactation when given immediately postpartum, cholestatic jaundice, migraine, increase in size of uterine leiomyomata, rash (allergic), mental depression, reduced tolerance to carbohydrates, vaginal candidiasis, change in corneal curvature (steepening), intolerance to contact lenses. The following adverse reactions have been reported in users of OCs and the association has been neither confirmed nor refuted: Premenstrual-like syndrome, cataracts, changes in libido, chorea, changes in appetite, cystitis-like syndrome, headache, nervousness, dizziness, hirsutism, loss of scalp hair, erythema multiforme, erythema nodosum, hemorrhagic eruption, vaginitis, porphyria, hemolytic uremic syndrome. **ACUTE OVERDOSE:** Serious ill effects have not been reported following acute ingestion of large doses of OCs by young children. Overdosage may cause nausea, and withdrawal bleeding may occur in females. **HOW SUPPLIED:** Loestrin **21** 1/20 is available in dispensers each containing 21 tablets. Each tablet contains 1 mg of norethindrone acetate and 20 mcg of ethinyl estradiol. Available in packages of five dispensers. Loestrin **Fe** 1/20 is available in dispensers each containing 21 white tablets and 7 brown tablets. Each white tablet contains 1 mg of norethindrone acetate and 20 mcg of ethinyl estradiol. Each brown tablet contains 75 mg ferrous fumarate. Available in packages of five dispensers. Loestrin **21** 1.5/30 is available in dispensers each containing 21 tablets. Each tablet contains 1.5 mg of norethindrone acetate and 30 mcg of ethinyl estradiol. Available in packages of five dispensers. Loestrin **Fe** 1.5/30 is available in dispensers each containing 21 green tablets and 7 brown tablets. Each green tablet contains 1.5 mg of norethindrone acetate and 30 mcg of ethinyl estradiol. Each brown tablet contains 75 mg ferrous fumarate. Available in packages of five dispensers.

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# Perspectives

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*Cover design: Clarke-Thompson Design.*

# UPDATE

## Tightening Up on C-Sections

The American College of Obstetricians and Gynecologists (ACOG) has issued revised guidelines about when repeat cesarean sections should be done.[1] Although ACOG's Committee on Obstetrics has over the years taken a progessively more favorable view of attempting vaginal delivery after a cesarean, the current revision now recommends that in the absence of specific contraindications, a woman with one previous cesarean delivery done with a low transverse incision should be encouraged to attempt labor. In addition, for the first time, the guidelines recommend considering vaginal delivery even for women who have had several previous cesarean deliveries.

New York State recently became the first state to create a statewide program to combat cesarean sections.[2] Beginning in 1989, all hospitals will be required to keep on file written justifications for every cesarean section that is performed. Hospitals with unusually high rates of cesarean delivery will then be visited by teams of obstetricians, who will analyze the records to determine how physicians at that facility might best reduce their use of surgical delivery.

**1.** American College of Obstetricians and Gynecologists, (ACOG), "Guidelines for Vaginal Delivery After a Previous Cesarean Birth," ACOG Committee Opinion No. 64, Washington, D.C., 1988.

**2.** G. Kolata, "New York Is First State to Try to Curb Caesareans," *New York Times*, Jan. 27, 1989, p. A1.

## Small Shield Settlements

Since mid-December, more than 50,000 of the nearly 200,000 women who have filed claims against A.H. Robins because of injuries allegedly related to use of the Dalkon Shield have agreed to accept payments of $725 or less.[1] By doing so, these women have given up their right to seek larger settlements or sue for greater damages. It is believed that most of those who have settled suffered relatively minor injuries or have no medical records to support their claims. As of the end of 1988, the trust fund, which was set up by a court after Robins declared bankruptcy, had paid out $22 million to meet approximately 35,000 claims.

**1.** P. M. Barrett, "Over 25% of the Dalkon Claimants Agree to Payments of $725 or Less," *Wall Street Journal*, Jan. 10, 1989, p. B8.

## Bad Times in Poor Counties

Rates of low birth weight and infant mortality in the country's 322 poorest counties are about 30 percent higher than the national average, according to a recent national study.[1] Moreover, trend data indicate that conditions have worsened in the 1980s. The yearly rate of decline in the overall infant mortality rate in these counties dropped from 12 percent in 1975–1980 to just five percent in 1980–1985, and the mean incidence of low birth weight actually rose slightly over the same period. The authors of the report conclude that since 1975, at least 4,000 infant deaths could have been avoided if mortality rates in these counties had been no higher than the national average.

**1.** J. Shotland, D. Loonin and E. Haas, *Off to a Poor Start: Infant Health in Rural America*, Public Voice for Food and Health Policy, Washington, D.C., 1988.

## The Art of the Pap Smear

It can be difficult to take an adequate Papanicolaou smear, and a medical worker's degree of professional training may not have much of an impact on whether he or she will be able to obtain one. A recent study showed that over a two-year period, only 56 percent of the Papanicolaou smears taken at an Air Force hospital in Mississippi actually contained endocervical cells.[1] Furthermore, there were few consistent differences in the success rate for clinicians with varying levels of experience; in the first year of the study, second-year postgraduate students were the most likely to have taken usable smears, but in the second year, nurse practitioners were most likely to have done so. The investigators were able to observe no consistent association between the clinicians' length of training and their success at taking Pap smears. They conclude that "the ability to obtain endocervical cells on cervical cytologic smears cannot truly be called a science, but an art."

**1.** D. Lee, G. A. Patrissi and P. F. Kaminski, "Accuracy of Papanicolaou Smears: Art or Science?" *Journal of Reproductive Medicine*, **33**:795, 1988.

## Many Teens Misinformed on AIDS

Misinformation about AIDS persists among teenagers, according to the results of surveys of more than 35,000 high school students in six cities and nine states.[1] Very high proportions know that the AIDS virus can be transmitted by sexual intercourse or intravenous drug use, and a substantial majority know that it cannot be passed by shaking hands with someone; however, in all but one site, the majority of students believe that one can contract AIDS as a result of giving blood, and at all sites more than half think that the AIDS virus can be transmitted by insect bites. Anywhere from one-third to one-half of the students say that AIDS can be contracted from a toilet seat. Nearly all believe that students of their age should be taught about AIDS in school; the proportions who say they know of a source of information about AIDS range from only 41 percent to 71 percent, however. Students at four sites were asked about their sexual activity and intravenous drug use. Overall, 29–76 percent said they had ever had intercourse, and 15–42 percent said they had had three or more sexual partners; 3–6 percent reported having injected cocaine, heroin or some other illegal drug. Male teenagers were substantially more likely than females to have engaged in any of these activities.

**1.** "HIV-Related Beliefs, Knowledge, and Behaviors Among High School Students," *Morbidity and Mortality Weekly Report*, **37**:717, 1988.

## Importance of Being Anonymous

Controversy continues over whether AIDS testing should be confidential or anonymous. Under the former approach, a patient's name remains on his or her records, but is not divulged; under the latter, the patient is identified only by a number. After 25 counties in Oregon that had provided only confidential testing began offering a choice between confidential and anonymous testing in December 1986, they attracted more patients (especially gay males), and the number of HIV-positive test results rose.[1] During the three months after the decision, over 1,200 people requested HIV testing, far more than in the four months preceding the decision. Fifty-eight percent said they would have come to the clinic even if anonymous testing had not been available, but 29 percent said they definitely would not have and 13 percent were undecided. The number of gay men requesting HIV tests rose by 125 percent once anonymous testing became available, and the number who tested positive for HIV infection climbed by 136 percent. Of the 81 gay men who tested positive, about half had said before learning the results that they would not have come for testing if the service had not been provided anonymously.

[1] L. J. Fehrs et al., "Trial of Anonymous Versus Confidential Human Immunodeficiency Virus Testing," *Lancet*, **II**:379, 1988.

## Cornucopia of AIDS Products

As of the end of 1988, 59 companies were developing 90 products for the diagnosis or treatment of AIDS.[1] Thirteen of the drugs are antivirals, 23 are immunomodulators and six are antiinfectives; a number of potential vaccines also are in various stages of development. Two antivirals, four immunomodulators and two antiinfectives are in Phase III trials, the final step before the submission of study data to the Food and Drug Administration for evaluation and approval.

[1] "U.S. PMA's AIDS Update," *Scrip*, No. 1366, Dec. 2, 1988, p. 20.

## Broken Condoms

Condom breakage is relatively rare, at least in "commercial" sex. Such is the conclusion of a brief report based on an experiment involving 34 male and female prostitutes in Australia.[1] In the course of more than 1,200 acts of intercourse taking place over four months' time, condoms broke only eight times—five times during vaginal intercourse and three times during anal intercourse (0.8 and 0.5 percent of all such acts, respectively). Each time a condom broke, the prostitute completed a short questionnaire that asked the circumstances under which the rupture occurred. In all eight cases, the condom broke before ejaculation. According to the investigators, condoms may afford prostitutes and their clients a good degree of protection against HIV infection, but they warn that because "amateur" sex often lasts longer than its professional cousin, it may place greater stress on condoms than was seen in their study.

[1] J. Richters et al., "Low Condom Breakage Rate in Commercial Sex," *Lancet*, **II**:1487, 1988.

## Japanese Find Kids Costly

A recent national public opinion poll in Japan shows that couples continue to have fewer children than they would like, primarily because of cramped living conditions and the cost of education.[1] Forty-four percent of the 3,400 married women under age 50 who were surveyed said they want two children, while another 41 percent want three. However, the same women have an average of 1.7 children, and few expect to have more than two. Three-quarters said that Japanese couples have such small families because of the high cost of education and other expenses of childrearing; more than one-third also cited poor housing conditions. Just 56 percent of women are using a method of contraception; 77 percent of such women rely on the condom, whereas only three percent use the pill. Eighty-five percent said they approve of abortion, and 30 percent said they had had one.

[1] "Social Constraints Trim Birthrate," *JOICFP News*, Nov. 1988, p. 6.

## Ectopic Pregnancies Still Rising

A total of 78,400 U.S. women experienced an ectopic pregnancy in 1985, up four percent from the previous year and 11 percent from the 1983 total of 69,600.[1] The rate of ectopic pregnancy in 1985 was 15.2 per 1,000 reported pregnancies and 20.9 per 1,000 live births; both rates represent substantial increases over levels of just five years before (10.5 and 14.5 per 1,000, respectively). On the other hand, the mortality rate associated with ectopic pregnancy continued to decline; by 1985, it had fallen to 4.2 deaths per 10,000 ectopic pregnancies, less than half the 1980 level.

[1] "Ectopic Pregnancy—United States, 1984 and 1985," *Morbidity and Mortality Weekly Report*, **37**:637, 1988.

## Young People at High Risk

According to a recent nationwide survey of about 1,500 people conducted by the National Opinion Research Center, five percent of never-married 18–29-year-old men had had more than 10 sex partners during the previous year.[1] Such a level of sexual intercourse means that up to 700,000 young single men may be at high risk of contracting an HIV infection. In contrast, no comparable women reported having had more than 10 partners, and only two percent said they had had five or more. Overall, 22 percent of the young men and women surveyed said that they had had no sexual partners in the preceding year, and 60 percent said they had had one. Six percent of the men who were surveyed said that at least one of their sexual contacts had been a "casual date or pick-up," compared with one percent of the women.

[1] "Number of Sex Partners and Potential Risk of Sexual Exposure to Human Immunodeficiency Virus," *Morbidity and Mortality Weekly Report*, **37**:565, 1988.

## Managing Pregnancy and an IUD

When a woman using an IUD becomes pregnant, the clinician is urged to remove the device if the tail is visible. But in cases where the tail can no longer be seen, removal has been virtually impossible, and the health professional may recommend abortion in order to minimize the risk of second-trimester spontaneous abortion. However, two recent reports describe 11 cases in which clinicians successfully removed an IUD during the first trimester of pregnancy when the tail had disappeared inside the uterus. In one case study, four women whose IUDs were removed by clinicians utilizing real-time ultrasound for guidance subsequently had normal pregnancies and deliveries.[1] In the second study, eight abortion patients with "lost" IUDs underwent video hysteroscopy; in seven cases, the IUD was removed with no apparent disturbance of the embryo.[2] Both teams of clinicians observe that in all of the successful removals, the IUD was lying either beneath or to one side of the fetus; IUD removal when the device is located close to the uterine fundus may be less successful.

[1] P. G. Stubblefield, A. F. Fuller, Jr., and S. C. Foster, "Ultrasound-Guided Intrauterine Removal of Intrauterine Contraceptive Devices in Pregnancy," *Obstetrics and Gynecology*, **72**:961, 1988.

[2] G. Barttai et al., "Video Hysteroscopic Removal of 'Lost' Intrauterine Devices During the First Trimester of Pregnancy," *Journal of Reproductive Medicine*, **33**:877, 1988.

# Fetal Research Under Fire: The Influence of Abortion Politics

*By Rachel Benson Gold and Dorothy Lehrman*

**Summary**

Since 1973, fetal research has repeatedly been used as a weapon in the war against abortion, miring important research in seemingly endless controversy. Government funding of fetal research has been suspended several times: A 1974 moratorium was lifted in 1975 after regulations concerning such research were promulgated; in 1985, a moratorium was placed on some federally funded fetal research; and in 1988, the assistant secretary for health halted all federally funded research on fetal tissue transplantation while an outside advisory panel examined related ethical, legal and scientific issues. The panel deemed such research acceptable, while also recommending that safeguards be established to separate abortion from transplantation research and to prevent profiteering from or encouragement of abortion. Although the report was forwarded to the assistant secretary in January, the moratorium has not yet been lifted by the new administration.

## Introduction

Over the last several decades, scientists have added greatly to the store of knowledge about human disease and development and made many major advances—among them the treatment of Rh incompatability and the development of the polio and rubella vaccines—as a result of the study of the human fetus and the use of fetal tissues. Recent research suggesting that transplants of fetal tissue may help in treating a variety of illnesses, from Parkinson's disease to diabetes, indicates that the need for fetal research undoubtedly will continue to grow.

Yet despite the obvious need for and the achievements of such studies, fetal research has been buffeted over the past 16 years by the political winds of the abortion controversy. Opponents of abortion seized upon fetal research as a political issue almost immediately after the 1973 Supreme Court decisions, and since then have repeatedly used it as a weapon in their war against abortion. In the process, they have succeeded in miring important research in seemingly endless controversy. Abortion foes in and out of government have worked to cut off or limit federal support for fetal research. Given the medical potential of such research, the withholding of government support represents a serious impediment to improving health.

## What Is Fetal Research?

Fetal research is an umbrella term encompassing several types of research activities, from studies on fetuses in utero to those using fetal tissue obtained from induced abortions. In utero research has been conducted for several decades and has led to major improvements in maternal and child health, such as the development of a vaccine to protect fetuses from Rh incompatibility (a condition that can cause miscarriage) and the development of several widely used techniques for diagnosing severe fetal defects.*

As with most basic biomedical research in the United States, fetal research is funded in large part by the federal government, much of it through the National Institute of Child Health and Human Development (NICHD), one of the 13 research institutes of the National Institutes of Health (NIH). (Little is known about the extent of privately funded and conducted fetal research.) Today, most NICHD-funded fetal research "focuses on the well-being of the mother and the fetus and assesses complications that arise during pregnancy,"[1] involving pregnancies that are being carried to term and utilizing noninvasive techniques (such as sonography) that pose virtually no risk to the developing fetus.

Among the NICHD's major research projects conducted on fetuses in utero are studies examining the use of sonography and other measurement techniques to monitor blood flow through the umbilical cord, fetal cardiac activity and fetal lung maturation. In research studying pregnant women with hypertension, the most common medical complication of pregnancy and one that can lead to intrauterine growth retardation and prematurity, investigators are monitoring fetal movement and heart rates and using ultrasound to diagnose, prevent and manage such cases. Other research studies are examining the use of ultrasound to predict cases of idiopathic distress syndrome, a major cause of neonatal death.

In fetal tissue research, investigators study samples of tissue taken from fetal remains following either spontaneous or induced abortions. (Fetal tissue obtained from induced abortions is preferred for

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*Amniocentesis, one of these techniques, has become a routinely recommended second-trimester procedure for pregnant women over 35; it can detect hundreds of defects and problems, including Tay-Sachs disease, Down syndrome, cystic fibrosis, muscular dystrophy and an array of neural tube defects, such as spina bifida and anencephaly. In 1980, nearly one in four pregnant women over age 35 had an amniocentesis performed (see: The Alan Guttmacher Institute, "The Financing of Maternity Care in the United States," New York, 1987, p. 20, Table 4). Besides giving the woman a chance to decide whether to carry the pregnancy to term if a defect is detected, amniocentesis allows the physician to change the timing or method of delivery or to plan for immediate treatment after delivery. In recent years, researchers have used fetal research to develop chorionic villus sampling, a procedure that can detect the same range of conditions as amniocentesis, but during the first trimester.

two reasons. First, current scientific understanding indicates that tissue obtained from spontaneous abortions might be defective. Second, the collection of fetal tissue is generally easier in the case of induced abortion, since most spontaneous abortions occur when the woman is not under medical supervision, thus making rapid tissue collection impossible.) Fetal tissue research has an even broader range of current and potential applications. Such tissue has been used to develop cell lines essential to the production of human viruses for both the diagnosis of disease and the production of vaccines. For example, the polio vaccine, the developers of which won the 1954 Nobel Prize for Medicine, was based on cultures of human fetal kidney cells; the developers of a vaccine against rubella used fetal tissue to demonstrate that the vaccine virus crossed the human placenta and infected the fetus.

Currently, researchers are using federal funds to study fetal retinal cells to determine a particular gene's role in retinoblastoma, a life-threatening childhood disease. They are also examining the differentiation of normal and malignant lymphoid cells, with the goal of understanding and curing lymphoid cancers, such as leukemia. Research to understand the regulation of lung surfactant protein expression may help prevent respiratory distress syndrome, while other work holds promise for the development of a vaccine for chicken pox, for an understanding of the rejection of kidney and liver transplants in adults and for the prevention of diseases such as sickle cell anemia. And researchers are using fetal cells in order to clarify the mechanism responsible for the neurological problems associated with AIDS.

Some of the most promising research using fetal tissue involves transplanting fetal cells obtained from induced abortions into severely ill adults. Fetal tissue has several unique properties that make it particularly suitable for such medical applications. First, it grows at a much faster rate than tissue obtained from an adult. As Robert Auerbach of the Center for Developmental Biology at the University of Wisconsin explained last year at a hearing on human fetal tissue transplantation, cell division occurs at a very rapid rate in the embryo and then slows with age. Similarly, the percentage of cells capable of division decreases with age. "If you examine blood vessels of the early chick embryo, 25–40 percent of those cells will be undergoing some form of cell division," Auerbach reported. "If you look at the adult individuals, it is less than one-tenth of one percent of cells that will do so."[2]

Another unique characteristic of fetal tissue is its plasticity, or adaptability. Embryonic and fetal cells can adapt to their environment, both in their function and in the degree to which they will grow, an ability gradually lost during maturation. Finally, fetal cells have special immune properties. Although all human tissues contain cells that upon transplantation can trigger rejection by the host body, fetal cells (unlike mature cells) can be purified to reduce the likelihood of rejection. Thus, purified fetal cells can be transplanted without the necessity of either tissue matching or long-term immunosuppression.

One particularly promising application of fetal cell transplantation is as a treatment for Parkinson's disease, which causes the brain to produce insufficient quantities of dopamine. Parkinson's disease, an incurable condition, affects 300,000–500,000 people in the United States.[3] U.S. researchers implanted small quantities of fetal brain cells into the brains of primates in which a Parkinson's-like syndrome had been induced, and the implanted tissue survived, grew, developed neural connections and took on some function.[4] Swedish researchers tried a similar technique in two women, using small quantities of tissue from fetuses aborted at 7–10 weeks' gestation.[5] (Tissue from approximately four aborted fetuses was required for each transplant.) Preliminary results indicate that the transplants had no adverse effects and that there was a slight improvement in both patients' conditions.[6] Two similar transplants were performed (with no government funding) on patients at the University of Colorado and at Yale University.[7]

Other researchers have obtained promising results by transplanting cells from the pancreases of aborted fetuses into adults with diabetes, in order to stimulate insulin production. According to Hans Sollinger of the University of Wisconsin, "In my estimation, there are probably more than 10,000 . . . laboratory animals, worldwide, [that] have been cured of diabetes" by means of fetal tissue transplants.[8] While very few U.S. patients have received such transplants, six patients in Australia and as many as 300 in China have been studied.[9] The studies generally have been conducted using fetuses aborted at 14 to 20 weeks, although researchers believe that tissue from fetuses aborted earlier in gestation may also prove useful.

While the application of fetal transplants for Parkinson's disease and diabetes has received the most prominent public attention, the technique has been investigated as a treatment for a wide range of other diseases and conditions. For example, in 1986, Robert Gale of the University of California at Los Angeles attempted to use fetal liver transplants to save the lives of radiation victims of the Chernobyl disaster in the Soviet Union. Gale had hypothesized that since the embryonic liver is a major producer of blood cells, its transplantation might provide patients with necessary blood-forming tissues. However, the patients died from radiation-induced burns before the success of the transplants could be ascertained.[10] Fetal tissue transplants are also being examined as possible cures or treatments for sickle cell anemia, thalassemia, leukemia, spinal cord injuries, Huntington's chorea, epilepsy, stroke, cancer and AIDS.

### Enter Politics . . .

Vocal opponents of abortion had scarcely questioned fetal research (involving either the study of fetuses in utero or the use of fetal tissue) during the decades before the 1973 Supreme Court decisions legalizing abortion. However, right-to-life leaders seized upon fetal research as an issue after abortion was legalized, arguing that using fetal tissue obtained from induced abortions for research purposes was an extension of a so-called "abortion mentality" that "dehumanized" the fetus. According to Judie Brown, president of the American Life League, "This is not a moral choice for any of us to make, because we are abusing members of our own human family for the purposes of advancing the needs of others."[11] As a result of the objections of antiabortion activists, researchers have had to operate since 1973 in an extraordinarily politicized environment.

The timing of events in 1973 seems to have been ideal for abortion opponents. Around the time of the Supreme Court decisions, a protracted debate was raging in the U.S. Congress over the protection of human subjects of biomedical research, following media reports of suspected cases of abuse. By January 1973, bills concerning research on human subjects had been introduced and hearings scheduled.[12] While research on fetuses and pregnant women represented only a small part of all research on human subjects, the debate coincided with mounting congressional reaction to *Roe* v. *Wade* and *Doe* v. *Bolton*. After discussions in the House of Representatives in which fetal research was debated as an abortion issue, Representative Angelo D. Roncallo (R.-New York) amended pending legislation to ban research on live fetuses in projects conducted by the National Science Foundation (NSF),[13] on the grounds that society should be "free from vivisection of its own living kind."[14] The provision had no effect, however, since no NSF projects involved fetal research.

The 1974 National Research Act contained a provision added during the Senate debate creating a commission to review all research involving human subjects that was supported by the Department of Health, Education and Welfare (DHEW, now the Department of Health and Human Services, or DHHS). During the debate, Senator James L. Buckley (R.-New York), a long-standing opponent of abortion, offered an amendment to ban most fetal research. After protracted discussion, the Senate voted 53 to 35 to adopt a compromise placing a moratorium on DHEW-supported research on the "living human fetus, before or after abortion," unless the purpose of the research was to assure the survival of that particular fetus (see Chart 1). It was to remain in effect until the newly created National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research had studied the issue and made recommendations.[15] Shortly after the bill had been passed, the DHEW issued regulations implementing the moratorium.[16]

The commission's chairman was Kenneth Ryan, chairman of the Department of Obstetrics and Gynecology at Harvard University. As part of its examination of the entire issue of research involving human subjects, the commission held seven public hearings on fetal research, and requested many of the leading authorities in the fields of medicine, ethics and law to prepare background papers for use in its deliberations on this topic; the volume containing the fetal research papers runs 600 pages. The commission issued its fetal research report in May 1975; on the basis of that work, the DHEW lifted the temporary moratorium and (on August 8, 1975) issued regulations on federally funded research involving fetuses and pregnant women.[17] These remain in effect.

The first part of the regulations calls for the protection of all human subjects of biomedical research. Before any research project involving human subjects can be funded by the DHHS, an institutional review board established by the researchers' sponsor (such as a university) must assure that the rights and welfare of research subjects will be protected. Any risks to participants must (to the extent possible) be minimized and must be clearly outweighed by the anticipated benefits of the research. In reviewing funding applications, the DHHS may also consider whether researchers have in the past "materially failed to discharge responsibility for the protection of the rights and welfare of human subjects (whether or not Department funds were involved)."[18] Funding may be terminated at any time if periodic reviews by the institutional review board find any failure to protect human research subjects.

The regulations provide special protections for fetuses and pregnant women involved in research studies, specifying that research involving fetuses and pregnant women can be conducted only if all appropriate studies on animals and nonpregnant women have been completed. In requiring assurance that the welfare of all research subjects will be protected, the regulations explicitly treat all fetuses equally, regardless of whether an abortion is intended; research posing more than a "minimal risk" to a fetus is permitted only if it is performed to meet the health needs of the specific fetus or pregnant woman. (Minimal risk requires that the anticipated risks of the research be no greater than those risks encountered in daily life or in routine medical examinations.)

Furthermore, the regulations stipulate that if the research involves a pregnancy that will be terminated, the abortion may not be delayed because of the research, nor may the abortion method be changed for the sake of research needs. Researchers may not offer any inducements, financial or otherwise, that might encourage or affect in any way the decision of a woman to have an abortion. If the research involves an aborted fetus, researchers are prohibited from either artificially maintaining or terminating its vital signs. In the extremely rare case in which an aborted fetus is capable of sustained life, the regulations require that it be considered a "premature infant," with full legal rights.

A waiver provision in the regulations allows the secretary of the DHHS to modify or set aside the risk standard in the case of research that is not undertaken for the benefit of the particular fetus involved and that cannot be shown to pose no more than a minimal risk. The waiver can be granted only on a case-by-case basis, following a review by the department's Ethics Advisory Board (EAB) and an opportunity for public comment. In determining whether to grant a waiver, the secretary is charged to consider whether the risks of the research are outweighed by its benefit to the subject and the importance of the knowledge sought.*

The regulations refer only briefly to the use of fetal tissue, stating that research involving "the dead fetus, macerated fetal material or cells, tissues or organs excised from a dead fetus shall be conducted only in accordance with any applicable state or local laws regarding such activities." Nonetheless, the prohibitions against altering the timing or method of abortion or offering any inducements to a woman to terminate her pregnancy most likely apply to research involving fetal tissue obtained after an induced abortion.[19]

## Controversy Returns

Concern over fetal research seemed to fade after adoption of the regulations in 1975, but in 1982 the issue dramatically resurfaced when Congress began to debate legislation to reauthorize the NIH.

The reemergence of the issue again seemed linked to the complicated politics of abortion. At the beginning of the 1980s, inspired by the election of Ronald Reagan and the installation in the Senate of a Republican majority that included many vocal abortion foes, antiabortion activists launched a series of moves designed to ban abortion. However, by 1982, Congress had defeated a bill intended to ban abortion and Senator Orrin G. Hatch (R.-Utah), chief sponsor of a constitutional amendment giving both the states and the federal government authority to ban abortion, had abruptly removed his measure from consideration. With legislative attempts to ban abortion clearly thwarted, abortion opponents sought other, less direct approaches to express their opposition to abortion and the "abortion mentality."

One was a new attack on fetal research. When the NIH bill came up for consideration in 1982, Representative William E. Dannemeyer (R.-California) proposed

*The EAB was established in 1978 to review ethical issues raised by specific research activities. The only research study of this nature that ever received a waiver was one that involved taking samples of fetal blood from a fetus in utero for use in the development of a diagnostic technique for sickle cell anemia, a genetic disease affecting 8–10 percent of the black population in the United States. Since the risk to the fetus from the procedure was unknown and was therefore considered potentially greater than minimal, the researchers requested permission to perform the initial studies on women terminating their pregnancies. Then-DHHS Secretary Joseph A. Califano, a vocal opponent of abortion, approved the waiver in 1979 (see: reference 10, p. 7). The dissolution of the EAB in 1980 has since precluded the possibility that any waivers can be granted. Although the DHHS announced in July 1988 that it intended to reconstitute an EAB and published for public comment a proposed charter in September 1988, a final charter has not yet been adopted. As a result, there is no current EAB.

**Chart 1. Chronology of events in the fetal research debate, 1975–1989**

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| Jan. 1973 | U.S. Supreme Court overturns restrictive abortion laws. |
| July 1974 | Congress places moratorium on federally funded research involving living human fetus. |
| | National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research is created. |
| May–Aug. 1975 | Commission completes study of fetal research and issues recommendations. |
| | DHEW promulgates regulations. |
| | 1974 moratorium is lifted. |
| Oct. 1985 | Congress passes 3-year NIH reauthorization that includes moratorium risk standard for federally funded fetal research. |
| Mar. 22. 1988 | Moratorium imposed on federal funding of fetal tissue transplantation research. |
| | Special NIH panel ordered to review transplant research. |
| Sept. 14. 1988 | NIH panel holds first meeting. |
| Nov. 4. 1988 | NIH reauthorization signed into law, including two-year extension of moratorium on waivers of minimal risk standard. |
| Dec. 5. 1988 | NIH panel holds last meeting and finalizes conclusion that fetal tissue transplant research is "acceptable public policy." |
| Dec. 14. 1988 | NIH director's advisory committee accepts panel's report. |
| | Lifting of moratorium on federal funding of fetal tissue transplantation research is recommended. |
| Jan. 1989 | NIH director Wyndgaarden transmits report of panel and recommendations of advisory committee to Assistant Secretary for Health. |

amending it with language virtually identical to the provision added to the 1974 National Research Act. Dannemeyer's amendment passed the House by a vote of 260 to 140 on September 30.[20] However, because the complex bill contained (among other controversial elements) detailed congressional directives for all of NIH's responsibilities, it did not reach the Senate floor before the end of the year and the end of the congressional session.[21] With the controversy over both Congress's role in overseeing NIH and fetal research in general continuing throughout 1983 and 1984, a three-year reauthorization for NIH was not adopted until 1985.

The final legislation passed in 1985 contained a compromise provision codifying a portion of the 1975 regulations: All fetuses should be treated equally, whether they are to be aborted or carried to term; further, NIH funds could be used only for research posing no more than a minimal risk, or for research intended to enhance the well-being or meet the health needs of that fetus.[22] The legislation also created a Congressional Biomedical Ethics Board, a bipartisan group made up of 12 members of Congress that in turn was to appoint a 14-member Biomedical Ethics Advisory Committee. This group was to undertake a series of studies on issues related to biomedical ethics, as requested by the congressional board.

The legislation charged this two-tiered structure to undertake, among other things, a study of the "nature, advisability, and biomedical and ethical implications of exercising any waiver of the risk standard within the regulations on fetal research."[23] Pending the results of this study, a three-year moratorium (not applicable to research conducted with private funds) was placed on waivers of the risk standard, thereby halting any federally funded research for which a waiver might have been needed. Although the congressional board was quickly appointed, the composition of the second-tier advisory committee became mired in disputes over the abortion views of prospective members. As a result, almost the entire three-year authorization period passed with no advisory committee appointed and no studies undertaken.

With the moratorium in place, fetal research receded as a political issue until 1988, when the three-year NIH reauthorization again came up for renewal. However, as work on a reauthorization measure began in the Senate, the issue took an unexpected turn. Before beginning their research, a group of NIH scientists had sought approval from DHHS Assistant Secretary for Health Robert Windom for a proposed project involving the transplantation of fetal tissue into an adult patient with Parkinson's disease. Windom's response propelled the issue of fetal tissue research (as opposed to research conducted on fetuses in utero) to the political forefront; his March 22 memorandum to NIH Director James Wyngaarden temporarily stopped all research "in which there is performed transplantation of human tissue from induced abortion."[24] (Like the moratorium included in the 1985 NIH legislation, this restriction applied only to federally funded research, and not to work funded through nongovernmental sources.) Windom also ordered NIH to establish an outside advisory committee or committees to examine the ethical, legal and scientific questions raised by this type of research.

Although the ban involved only tissue transplants, antiabortion forces immediately sought White House assistance in broadening the prohibition to include all research involving fetal tissue. According to John Willke, president of the National Right to Life Committee, all research involving fetal tissue should be prohibited because "harvesting organs or tissues from abortion victims further dehumanizes unborn children and gives abortion an aura of legitimacy."[25]

Despite the interest in fetal tissue research generated by Windom's unilateral action, the NIH reauthorization that was introduced in the Senate a week later contained no provisions concerning either fetal tissue transplantation or fetal tissue research in general. Instead, the legislation was along the lines of its 1985 predecessor, and among other things extended the moratorium on waivers for research involving human fetuses in utero for another two years. However, since the Congressional Biomedical Ethics Board had been unable even to begin its review of the issue, the bill proposed that the National Academy of Sciences study the "scientific, ethical and funding issues surrounding the conduct of research on fetal therapy and involving fetuses," including the issue of waivers of the minimal risk standard in the federal fetal research regulations.[26]

The legislation was approved by the Senate Labor and Human Resources Committee on April 13, with no discussion of the highly controversial issues raised by Windom's memorandum; the bill passed the Senate on August 3, after deletion of the provisions concerning the National Academy of Sciences study and a return to the original concept of a study conducted by the advisory committee of the Congressional Biomedical Ethics Board. Still bearing no mention of research involving fetal tissue or fetal tissue transplantation, the legislation was passed by the House on October 13 and was signed into law on November 4.[27]

Nonetheless, fetal tissue transplantation was the subject of sporadic Senate debate for the remainder of the 1987–1988 congressional session, as a result of amendments offered by Senator Gordon Humphrey (R.-New Hampshire), one of the body's leading abortion opponents. When the Senate considered legislation to amend the National Organ Transplant Act* in June 1988, Senator Humphrey proposed extending the law's prohibition against profiteering in human organs to cover fetal tissue that would be used for transplantation. Although some contended that fetal organs and tissues already came under the rubric of the organ transplant law, Senator Humphrey's amendment was passed by a voice vote, and the bill became law on November 4.[28]

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*Among other things, the act prohibits the provider of a human organ, such as a kidney, from making a profit by selling it to a researcher for research purposes; providers, however, may be reimbursed for any reasonable costs incurred in obtaining the organ for the researcher.

Senator Humphrey also raised the issue when the annual DHHS appropriations bill came before the full Senate on July 27, 1988, by proposing a package of four amendments that restated provisions of the pending NIH bill, the amendment to the organ transplant act and the current federal regulations. Although the package passed with neither discussion nor disagreement, all four of its components were dropped as unnecessary and duplicative by the House-Senate conference committee that met to reconcile differences between the House and Senate versions of the bill.

### The NIH Panel

Meanwhile, the NIH had begun the laborious process of establishing the outside advisory panel called for by Windom. Formally named the Human Fetal Tissue Transplantation Research Panel, it was constituted as a body of "consultants" to the standing advisory committee to the director of the NIH. The chairman of the 21-member panel was Arlin Adams, a retired federal judge of the U.S. Circuit Court of Appeals for the Third Circuit and the vice president of the American Philosophical Society. Although Judge Adams was designated the overall chairman, the group's scientific deliberations were to be led by Kenneth Ryan, who had been chairman of the commission that had developed the current federal regulations on research on human subjects; the panel's ethical deliberations were to be guided by LeRoy Walters, director of the Center for Bioethics at Georgetown University.*

On September 9, just days before the panel was scheduled to convene for its first meeting, it was reported that as a part a Special Report to the President on the Family, the White House Office of Policy Development, acceding to the demands of abortion opponents, was working on a draft executive order to ban all research involving fetal tissue, even if the research did not involve the transplantation of such tissue.[29] The media accounts spurred an immediate reaction from researchers and politicians, who argued not only that the move would block important ongoing research but also that the administration should await the deliberations of the special NIH advisory panel that the antiabortion activists had so vigorously supported. The White House quickly and publicly backed down, claiming that the draft executive order was only one of the possible options being examined to implement the newly released report, which, among other recommendations, called for a complete ban on federal funding of fetal research.[30]

In this highly charged political atmosphere, the special NIH advisory panel held its first meeting on September 14, hearing from a variety of experts on the ethical, scientific and legal implications of research involving the transplantation of human fetal tissue derived from induced abortions. Many leading researchers involved in studies using transplanted fetal tissue addressed the panel, as did representatives of several procurement agencies that provide fetal tissue to researchers.

The first issue considered by the panel was the moral relevance of abortion to the decision to use aborted human fetal tissue for research. Witnesses opposed to abortion contended that research would be unacceptably tainted by any connection to abortion; Carl Anderson, of the Knights of Columbus, argued that abortion and fetal tissue research "cannot be ethically separated, any more than obtaining benefits from stolen goods can be separated from the ethical condemnation of the theft itself. Because induced abortion is the unethical termination of human life, we consider unethical the use of human tissue resulting from induced abortion, no matter the benefits obtained."[31]

Other witnesses testified that the fact that the tissue was obtained through an abortion did not render it unusable from a moral perspective. According to Carol Lurie of the Juvenile Diabetes Foundation, "The morality of abortion is irrelevant from where I speak. Whether we like it or not, the legislatures and the courts have examined the moral and legal issues associated with abortion and have concluded that abortion is a legal act. . . . Murder is tragic, suicide is tragic and to many abortion is tragic, albeit a legal act. But in all three instances, the tissue [that] can be derived is that of a cadaver. It is socially and ethically reprehensible to destroy fetal cadaver tissue [that] can be used possibly towards saving millions of lives."[32]

After hearing the testimony, the panel decided that the fact that human fetal tissue is obtained from induced abortions is relevant to transplantation research. However, according to the panel, "in light of the fact that abortion is legal and that the research in question is intended to achieve significant medical goals, the panel concludes that the use of such tissue is acceptable public policy. . . . The panel notes that induced abortion creates a set of morally relevant considerations, but notes further that the possibility of relieving suffering and saving life cannot be a matter of moral indifference to those who shape and guide public policy."[33] Although the panel thus concluded that transplantation research is acceptable, it recommended the establishment of several safeguards to separate the abortion from the research and prevent either profiteering or any encouragement of abortion as a result of such research.

One of the most heated debates occurred over the issue of whether the very existence of fetal tissue transplantation research would encourage women to have abortions. One member, opposed to abortion, claimed that "there is no question that there are going to be women out there who will be swayed by the good and benefit that can be brought to others in terms of making a decision in favor of abortion when they might not do so if this avenue were closed."[34] Several witnesses disagreed, arguing that such a line of thought reflected a misunderstanding of the reasons why women choose abortion. According to Robin Chandler Duke of the Population Crisis Committee, "It is very clear that a lot of people around this room are not aware of why women have abortions and who those women are. . . . To pose the possibility that they would consider abortions on some of the grounds that have been expressed here [is] appalling."[35]

After lengthy deliberations, the panel

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*The members of the panel were the Honorable Arlin M. Adams, U.S. Court of Appeals (Ret.), and Schnader, Harrison, Segal and Lewis, Philadelphia; Kenneth J. Ryan, Brigham and Women's Hospital, Boston; LeRoy Walters, Georgetown University, Kennedy Institute of Ethics, Washington, D.C.; Rabbi J. David Bleich, Cardozo Law School, New York; James Bopp, Jr., Brames, McCormick, Bopp and Abel, Terre Haute, Ind.; Father James T. Burtchaell, University of Notre Dame, Notre Dame, Ind.; Robert C. Cefalo, University of North Carolina School of Medicine, Chapel Hill; James F. Childress, University of Virginia, Charlottesville; K. Danner Clouser, Pennsylvania State University, Hershey; Dale Cowan, Marymount Hospital, Garfield Heights, Ohio; Jane Delgado, National Coalition of Hispanic and Human Services Organizations, Washington, D.C.; Bernadine Healy, Cleveland Clinic Foundation, Cleveland; Dorothy I. Height, National Council of Negro Women, Alexandria, Va.; Barry J. Hoffer, University of Colorado, Denver; Patricia A. King, Georgetown University Law Center, Washington, D.C.; Paul Lacy, Washington University School of Medicine, St. Louis, Mo.; Joseph B. Martin, Massachusetts General Hospital, Boston; Aaron Moscona, University of Chicago, Chicago; John Robertson, University of Texas School of Law, Austin; Daniel Robinson, Georgetown University, Washington, D.C.; and the Reverend Charles Swezey, Union Theological Seminary, Richmond, Va.

concluded that the more than 30 years of publicized research involving fetal tissue has yielded "no evidence that [such] research has had a material effect on the reasons for seeking an abortion in the past."[36] Should demand outstrip the supply of fetal tissue in the future, the group asserted, researchers could easily adopt procedures "such as now exist for distributing the scarce supply of hearts, livers and kidneys to patients on waiting lists for transplants."[37] Nonetheless, to preclude any possible encouragement of abortion, the panel recommended that a woman "should not be induced to terminate pregnancy in order to furnish fetal tissue for transplantation or medical research."[38] According to the panel, the decision to have an abortion should be kept wholly separate from that of whether the fetal tissue should be used for research purposes: "The decision and consent to abort must precede the discussion of the possible use of the tissue and any consent required for that use."[39] (Such separation is a longstanding principle embodied in current federal regulations concerning fetal research.) In addition, the panel urged that the "timing and method of abortion should not be influenced by the potential uses of fetal tissue for transplantation or medical research," and that "no abortions should be scheduled or otherwise accommodated to suit the requirements of research."[40]

One panel member, James Bopp of the National Right to Life Committee, was particularly worried that abortion clinics would have a financial incentive to encourage women to seek abortions. Bopp argued that abortion clinics could reap a substantial profit by selling fetal organs for research purposes, and that as research begins to produce useful therapies, more fetal organs will be needed, raising the possibility of greater profit and, therefore, coercion by abortion providers. However, the panel found no evidence that abortion clinics have profited from the sale of fetal tissue, noting that "there have sometimes been payments made to abortion facilities and physicians who have provided fetal tissue for research. These payments are intended to cover the costs to the abortion facility of providing access to the procurement agency, including staff time in requesting [patient] consent and retrieving tissue and use of the clinic space by employee of the procurement agency."[41] Nonetheless, the panel chose to prevent even the possibility of such profiteering by recommending this de facto standard: "Payments and other forms of remuneration and compensation associated with the procurement of fetal tissue should be prohibited, except payment for reasonable expenses occasioned by the actual retrieval, storage, preparation and transportation of the tissues."[42]

The panel was also concerned that a woman might feel pressured to terminate a pregnancy if a friend or family member could benefit from a fetal tissue transplant. Since the panel members could find no evidence that prohibiting such intrafamilial use of fetal tissue would limit valid clinical objectives and believed the idea of "directed donations" to be repugnant to many, the panel recommended that such donations be prohibited: "There should be no federal funding of experimental transplants performed with fetal tissue from induced abortions provided by a family member, friend or acquaintance."[43]

Many opponents of fetal tissue transplantation based their disapproval purely on the fact that the tissues used in such research are derived from induced abortions. According to Kay James of the National Right to Life Committee, "Is there any good great enough to warrant some reconsideration in terms of fetal tissue use? . . . [T]he answer to that question is no, because of the fact that when you are recognizing that we have a member of the human family, a child, an unborn child, whose body is being used to harvest spare parts for the benefit of the rest of us, when we recognize that that child is being used to grow tissue which may be used in experiments and research, I would again come back and answer no."[44]

In a lengthy dissent, panel members James Bopp and James Burtchaell likened the transplantation of fetal tissue to the grotesque experiments performed by the Nazis on concentration camp inmates. In the end, however, their opposition boiled down to their opposition to abortion: "Research employing the remains of electively aborted fetuses is, in our judgment, ethically compromised by the absence of authentic informed consent, by complicity with the abortions that supply the tissue, and by the encouragement it will give to yet more abortions."[45]

## The Issue Unresolved

On December 5, the special NIH panel forwarded its report to the NIH director's standing advisory committee, which unanimously accepted the panel's entire report, with no changes. The committee went a step further than the special panel by specifically, and again unanimously, voting to recommend that the moratorium on the federal funding of fetal tissue transplantation research be lifted. In late January, NIH director Wyngaarden formally forwarded the reports and recommendations of both the special panel and the committee to Assistant Secretary Windom.

Within days of the formal conclusion of the NIH review process, George Bush was sworn in as president, and the administration changed hands with the issue of fetal tissue transplantation research unresolved and the moratorium on federal funding of such research still in place. Whether the new administration will lift that moratorium and how long that process may take remain unknown. Two things, however, are certain. One is that the scientific community has again resisted (as in 1975) strong political pressures that threatened to block promising biomedical research simply because it had some connection to abortion. The other is that the antiabortion movement will continue to pursue its fight against abortion in any arena, including that of important biomedical research.

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**21.** "Abortion Restriction Axed as 'Lame Ducks' Go

*(Continued on page 38)*

# A Direct Mailing to Teenage Males About Condom Use: Its Impact On Knowledge, Attitudes and Sexual Behavior

*By Douglas Kirby, Philip D. Harvey, David Claussenius and Marty Novar*

**When pamphlets on condom use and coupons for free condoms were sent to teenage boys whose names were supplied by mailing list brokers, a large percentage received them, read them and discussed them with friends and parents.**

### Summary

In August 1987, a letter, informational pamphlet and order coupon for free mail-order condoms were sent to an experimental group of teenage males 16–17 years of age. An experimental design was used to measure the impact of the mailing on teenagers' knowledge, attitudes and behavior. Approximately five weeks after the mailing, 985 members of this group and 1,033 members of the control group (who received no mailing) were interviewed by telephone. About seven months after the mailing, members of the experimental group who claimed they had ordered the free condoms were reinterviewed by phone. The results of the initial interviews revealed that about three-fourths of the teenagers in the experimental group had received the materials, and about two-thirds had read them. Moreover, males in the experimental group, particularly those who reported having received and read the pamphlet, were slightly but statistically significantly more knowledgeable about sexually transmitted diseases (STDs), pregnancy and contraceptives. On the other hand, there were no differences between males in the experimental and control groups in attitudes toward STDs or birth control, nor were there differences in actual sexual activity or in the use of birth control. However, the experimental group was significantly more likely to have ordered condoms by mail, presumably as a result of having received the free mail-order condom offer. Many of those who ordered condoms had previously had sex and had used condoms. However, a sizeable portion of those who ordered condoms did so prior to first intercourse, suggesting a possibly important early intervention.

### Introduction

In this country, efforts to combat unintended pregnancy and the spread of STDs have focused primarily upon sex education in the schools and upon the provision of services through family planning clinics and STD clinics. Thus far, organizations concerned with teenage pregnancy and STDs have placed very little emphasis on the marketing of contraceptives. There has in fact been surprisingly little research on marketing initiatives in this area: promising direct-mail experiments in Chicago in 1962,[1] an advertising experiment in four American cities in 1971,[2] a direct mailing to welfare mothers in 1972,[3] a direct mailing to teenagers in 1974[4] and a promising test of radio messages to promote vasectomies in 1977.[5] Little other such research is reported in the literature.

During the last decade, a number of organizations have tried related (but different) types of efforts, such as media campaigns. Nonprofit organizations such as the Center for Population Options and the Children's Defense Fund and governmental agencies such as the City of New York, the Ounce of Prevention in Illinois and the federal Office of Family Planning have developed poster campaigns for communities or public service announcements for radio or television. Initially, most of these campaigns focused upon the need to prevent teenage pregnancy and upon sexual responsibility; more recently, some have focused upon the prevention of AIDS. Few or none have been devoted to specific methods of birth control, such as condoms, and none have involved direct mail.

A variety of local initiatives have sought to promote condom use. For example, during "Condom Week," a number of communities have held "condom parties," condom limerick contests and other events intended to popularize the method. Increasing concern about AIDS has spurred efforts to distribute condoms free of charge (e.g., "Three for Free" in Maryland[6] and "Condom Sense" in Atlanta[7]). However, these initiatives, while laudable, are still limited in scope; they are not mass-marketing approaches, and their impact upon knowledge and behavior has not been carefully evaluated.

Finally, private manufacturers and distributors of contraceptives have done limited contraceptive advertising in magazines and on television. However, these efforts have been in the private sector, they do not appear to have been directed toward teenagers and they have not been designed or evaluated for social impact.

All of these activities, whether measured in terms of the funds spent or the impact they have had, are a remarkably small part of our total effort to reduce unintended pregnancy and the spread of STDs in this country. Moreover, organizations concerned with teenage pregnancy and STDs have made remarkably few attempts to market condoms or other contraceptives on a large scale.

In contrast, contraceptive marketing has received much greater attention in family planning efforts abroad. Some marketing

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programs designed to increase the use of birth control (usually referred to as contraceptive "social marketing") have achieved considerable funding, attention and success.[8] For example, subsidized mass-marketing efforts have substantially increased contraceptive use in Bangladesh,[9] Jamaica,[10] Egypt,[11] Sri Lanka[12] and Colombia.[13] It is particularly surprising that these international contraceptive marketing successes have had so few counterparts in the United States, given both that marketing skills and techniques are even more easily available here and that the presence of a largely literate population makes the use of such potent marketing tools as direct mail and couponing both easier and potentially more effective.

Furthermore, the mass marketing of contraceptives seems particularly appropriate for reaching teenage males. It is well-known that teenagers of either sex rarely attend family planning clinics until after they become sexually active,[14] and that males are unlikely to attend clinics at any time. Despite providers' persistent efforts to involve teenage males through rap sessions, community centers and clinic outreach programs, remarkably few of them come to clinics and become part of the family planning system. When they do share in or take responsibility for the decision to use birth control, they most commonly use condoms that they have obtained from friends or from a drug store.[15] Thus, it is more difficult to reach young males through other, more traditional approaches. However, they can be reached with a mass-marketing approach.

For young males (as well as for other audiences), direct mail has several advantages. First, mailing techniques and tools are well developed, and large numbers of teenage males are on mailing lists. For example, one single company specializing in mail-list management has the names of more than three million high school sophomores, juniors and seniors. These firms compile and frequently update large lists of names from school registrations, magazine subscriptions, car registrations and other sources. They then organize the lists on the computer so that individuals with specified characteristics can be selected (e.g., those of a certain sex or age, or those living in zip codes with desired socioeconomic characteristics).

Second, direct mail is inexpensive; mailings can cost as little as 20 cents per recipient. Third, mailings can be finely targeted. It is possible, for example, to target young men living in communities where the pregnancy rate or the risk of getting AIDS is especially high. Because mailing houses can select particular states, cities and even zip codes or census tracts, materials can be sent to high-risk areas.

Fourth, direct mail is not encumbered by legal and societal barriers to contraceptive dissemination. List brokers are willing to provide lists of individuals to family planning agencies, and, of course, the post office must carry the mail. Thus, a mailing program can surmount any number of barriers to the provision of education or services by going directly to the consumer. Consequently, it should be possible to mount a substantial regional or national program without going through the laborious process of acquiring approval from innumerable local institutions and interested groups that may be hostile to controversial family planning efforts for young people. Finally, direct mail has the potential for great speed. If an effective intervention is found, millions of teenagers can be reached in a few weeks or months.

On the other hand, the potential impact of mass mailings should not be exaggerated. Mass mailings, after all, represent a relatively small intervention in the lives of each recipient. Three studies that have examined the impact of mass mailings involving contraceptives have produced inconclusive results. A 1962 study of direct-mail marketing to adults indicated that large percentages of intended recipients received the initial mailings, although much lower percentages requested more complete information on birth control. The mailings may have produced a short-term increase in the number of new family planning patients, but this increase did not persist long beyond the mailings.[16]

Another study, conducted in Tennessee in the early 1970s, examined the direct-mail dissemination of information about birth control and local family planning clinics to 150 welfare mothers.[17] Subsequent interviews with the recipients and a similar control group indicated that the mailing increased both factual knowledge about contraceptives and the number of people with whom the recipients had discussed family planning.

Finally, an unpublished evaluation of a direct mailing in 1974 to 12,000 teenagers concluded that it was successful in providing the teenagers with information about sex, STDs and birth control, in favorably altering attitudes toward condoms and, apparently, in increasing condom use.[18] However, the study was flawed methodologically, with no control group and potential self-selection biases in the pretest and posttest comparisons.

In sum, relatively little attention has been directed toward using mass marketing for family planning–related materials in this country, only one attempt has targeted teenage males specifically and there have been no rigorous evaluations of these projects. Consequently, important questions about mass mailings, especially about mailings to high-risk teenagers, remain unanswered. For example, are a reasonably large percentage of the names of teenagers on mailing lists valid? Will reasonably large percentages of teenagers actually receive the information? If they receive it, will they read it? Will they show it to and discuss it with others? Will they learn from it? Will it change their attitudes toward contraceptives? Will they actually order any contraceptives? Will it change their contraceptive behavior? Has such an approach the potential to reduce the incidence of teenage pregnancy or STDs? The study described in this article was designed both to answer these questions and to determine the feasibility of inexpensive, quickly conducted mailings to large numbers of teenage males.

## Methodology

The mailing used in this study included, along with a cover letter, a pamphlet called *The Man's World* and an order coupon (with return envelope) for free condoms. *The Man's World* presented facts in a straightforward manner and discussed STDs, pregnancy and different forms of birth control. However, it gave greatest emphasis to the condom as an effective method of preventing both STDs and pregnancy. (Although the pamphlet mentioned AIDS, it did not stress it.) The pamphlet was 12 pages long, but to ensure that it would be easy to read, would emphasize major points and would appeal to low-income males of all races, many boldface and bulleted statements were used, as well as sketches and diagrams. A typical statement, for example, was, "You don't want VD, AIDS, HERPES or UNWANTED PREGNANCIES, so, USE CONDOMS." (The pamphlet was pilot tested with several groups of low-income males, who suggested a number of revisions that were incorporated. It was also shared with sex-education professionals, who made several recommendations as well.)

The order coupon enclosed in the mailing enabled the recipient to obtain a sample of free condoms, thus helping him avoid the embarrassment of buying condoms at a drug store. Moreover, the offer was for free condoms, thus eliminating any financial reason for not obtaining condoms. To guarantee confidentiality, the cover letter indicated that the condoms would be mailed in unmarked packages.

Those who ordered condoms received, along with them, a brochure promoting a wide variety of condoms and an order form for additional condoms. (These condoms were not offered for free, however.)

Because low-income males are especially likely to engage in risk-taking behavior, this group became the target population. Among low-income male teenagers, the goal was to reach those approximately 16 or 17 years of age. Boys younger than 16 were considered less likely to be having intercourse, and those older than 17 were thought more likely to have already established patterns of contraceptive use.

To evaluate the feasibility and effectiveness of this marketing approach, we employed a standard experimental design involving the following steps: In 1987, the names of male teenagers believed to be 16–17 years old were purchased from one of the many firms that provide such lists. The names were randomly divided into an experimental group and a control group, the materials were sent to the experimental group and members of both the experimental and control groups were later interviewed, by telephone, for data on their knowledge, attitudes and behavior.

This design approximated a double-blind experiment, in that throughout most of each interview, interviewers did not know whether the respondent was part of the experimental or the control group, while the respondents probably did not realize that they were part of an experiment.

The teenagers who actually ordered condoms were reinterviewed by phone several months later. These follow-up interviews provided more long-term information about their receipt and use of the condoms.

For methodological reasons, the selected sample had to be roughly representative of low-income teenage males throughout the country, so that the results of the study could be reasonably generalizable. Furthermore, it had to represent the kind of sample that list brokers can provide in much larger numbers, so that if the mass-marketing approach proved effective, it could be replicated on a much larger scale.

A list broker was asked to select more than 24,000 names from its master list to resemble as much as possible all low-income male teenagers throughout the country, concentrating on zip codes from areas of low socioeconomic status. However, the sample was found to contain too many names from Iowa (about 18 percent of the total) and too few from major cities. To correct the problem, 2,728 names from Iowa were replaced with 2,013 names from New York City, Los Angeles, Chicago, Philadelphia and Detroit. Although this approach greatly improved the sample's geographic distribution, teenagers from the Mountain and Pacific states were still underrepresented, and the sample remained larger than necessary. Consequently, about 8,000 names were randomly selected from the sample, with names from the Mountain and Pacific states weighted, so that the final sample was more geographically representative. Names from this sample were randomly assigned to the experimental and control groups. During the telephone interviewing, names were randomly drawn from each group alternately, until about 1,000 interviews were completed in each group.

The interviewing was begun about five weeks after the mailing was sent to the experimental group, and was completed within a two-week period. The interview questionnaire included items on the respondents' demographic characteristics; social activities; plans for the future; sexual activity; use of different types of birth control; knowledge about pregnancy, STDs and methods of birth control; attitudes toward pregnancy, STDs and condom use; and receipt and use of the mailed materials.

Many of the questions in the survey had been used previously in major studies. Nevertheless, the questionnaire was pretested on three different occasions through telephone interviews with teenage males chosen randomly from the master list. During each pretest, about 25 male teenagers were telephoned; the interview questionnaire was refined after each pretest.

All the interviewers were college students (both males and females) who related well to teenage males. The gender of the interviewer did not affect response rates. Interviewers were trained before beginning the surveys; several gained experience while conducting the pilot tests of the questionnaire.

Up to six telephone calls were made in order to reach each teenager. Efforts were made to track down teenagers by calling back at more convenient times and by obtaining a forwarding phone number if the teenager had moved or had been given a new number. Other teenagers who answered the phone or were in the same household were not allowed to complete the interview for the designated respondent. If a teenager could not be contacted, the next name on the list was selected.

The completion rate for the interviews was 53 percent. The primary reason for incomplete interviews was the inability to reach the designated respondent—either no one answered the phone within six calls, the phone number was incorrect and there was no forwarding number or the respondent was never there. Only 14 percent of the respondents actually reached by phone refused to complete the interview—10 percent refused to begin the interview and four percent terminated it, most commonly when the questions about sexual behavior began. Thus, the response rate for the males actually reached by phone was 86 percent, much higher than the overall response rate.

### Sample Characteristics

Table 1 shows the background characteristics for the total sample and for the experimental and control groups. It demonstrates that the sampling procedure was successful in selecting males who were 16–17 years old: Ninety-one percent met that criterion. The sample also consisted primarily of juniors in high school (80 percent). On the other hand, the mailing list did not provide a disproportionate number of low-income males, as had been desired. In fact, in a variety of ways, the sample was more middle-class than the overall U.S. population. For example, a very high percentage of the respondents (83 percent) lived with both parents, the respondents' family incomes were higher than average (62 percent with family incomes above $25,000 annually), only three percent of them had parents who received food stamps and most claimed that they did well in school (92 percent said average or better); these percentages are all higher than the national averages.

On other dimensions, however, the sample represented a broad spectrum of American teenagers. It included an approximately representative distribution of whites and blacks (82 percent and 12 percent of the sample) and of males from towns and cities of different sizes and different parts of the country (not shown). On the important issue of sexual activity, the sample clearly matched national standards. In this sample of males, 55 percent had ever had intercourse; in one national sample of metropolitan-area males, 56 percent of 17-year-olds had had intercourse.[19]

In sum, the mailing list successfully produced a sample containing primarily 16–17-year-olds, demonstrating that this important age-group can be reached

**Table 1. Percentage distribution of teenage males in experimental and control groups, by selected background characteristics**

| Characteristic | Total | Control | Experimental | | |
|---|---|---|---|---|---|
| | | | All | Recalled getting mailing | Read mailing |
| **Age** | | | | | |
| N | 2,017 | 1,033 | 984 | 713 | 652 |
| ≤15 | 2 | 2 | 2 | 2 | 2 |
| 16 | 32 | 30 | 33 | 34 | 34 |
| 17 | 59 | 60 | 58 | 59 | 59 |
| 18 | 6 | 7 | 6 | 5 | 4 |
| ≥19 | 1 | 1 | 2 | 1 | 1 |
| **Grade** | | | | | |
| N | 1,948 | 992 | 956 | 696 | 637 |
| 8 | 1 | 0 | 0 | 0 | 1 |
| 9 | 1 | 1 | 1 | 1 | 1 |
| 10 | 11 | 11 | 12 | 11 | 11 |
| 11 | 80 | 80 | 80 | 82 | 82 |
| 12 | 7 | 7 | 7 | 6 | 6 |
| **City size** | | | | | |
| N | 2,018 | 1,033 | 985 | 713 | 652 |
| Small town | 39 | 39 | 39 | 40 | 40 |
| Large town | 9 | 11 | 8 | 8 | 8 |
| Small city | 31 | 31 | 31 | 31 | 30 |
| Large city | 21 | 19 | 23 | 22 | 22 |
| **Parents at home** | | | | | |
| N | 2,016 | 1,030 | 984 | 713 | 652 |
| Mother only | 12 | 11 | 13 | 13 | 14 |
| Father only | 4 | 4 | 4 | 4 | 4 |
| Both | 83 | 82 | 82 | 82 | 81 |
| **Annual family income (in 000s)** | | | | | |
| N | 1,614 | 821 | 793 | 568 | 520 |
| <$15 | 9 | 9 | 10 | 9 | 10 |
| >$15–$25 | 28 | 30 | 27 | 28 | 28 |
| >$25–$35 | 31 | 31 | 32 | 31 | 30 |
| >$35 | 31 | 31 | 31 | 32 | 32 |
| **Family receives food stamps** | | | | | |
| N | 1,989 | 1,018 | 971 | 702 | 642 |
| Yes | 3 | 3 | 3 | 3 | 3 |
| No | 97 | 97 | 97 | 97 | 97 |
| **Ethnicity** | | | | | |
| N | 2,017 | 1,033 | 984 | 712 | 651 |
| White | 82 | 82 | 83 | 83 | 83 |
| Black | 12 | 12 | 12 | 11 | 12 |
| Hispanic | 4 | 4 | 3 | 4 | 3 |
| Asian | 1 | 1 | 1 | 0 | 0 |
| Native Amer. | 1 | 1 | 1 | 1 | 2 |
| **School class status** | | | | | |
| N | 1,951 | 994 | 957 | 696 | 637 |
| One of best | 15 | 14 | 15 | 15 | 15 |
| Above mid. | 28 | 29 | 28 | 27 | 28 |
| Middle | 49 | 49 | 50 | 52 | 51 |
| Below mid. | 6 | 7 | 5 | 5 | 5 |
| Near bottom | 1 | 2 | 1 | 1 | 1 |
| **Future plans** | | | | | |
| N | 2,016 | 1,031 | 985 | 713 | 652 |
| Complete h.s. only | 35 | 34 | 36 | 35 | 36 |
| Some college/other post–h.s. training | 39 | 39 | 39 | 41 | 40 |
| Complete college | 23 | 24 | 23 | 23 | 24 |
| Other | 1 | 2 | 1 | 1 | 1 |
| **Receipt of sex education** | | | | | |
| N | 2,016 | 1,033 | 984 | 712 | 651 |
| Yes | 72 | 72 | 72 | 72 | 72 |
| No | 28 | 28 | 28 | 28 | 28 |
| **Ever had sex** | | | | | |
| N | 1,988 | 1,016 | 972 | 735 | 668 |
| Yes | 55 | 54 | 57 | 57 | 57 |
| No | 45 | 46 | 43 | 43 | 43 |
| Total | 100 | 100 | 100 | 100 | 100 |

Note: In this and subsequent tables, Ns may not be equal because some teenagers did not answer all questions completely.

through mailings. However, it did not reach a large proportion of low-income youths, raising some questions about the potential of the approach in that regard.

## Receipt and Use of Pamphlet

Seventy-two percent of the members of the experimental group who were sent the materials recalled having received them; 23 percent did not (to their knowledge) receive them and five percent could not remember whether or not they had received them. The 72 percent may represent an overestimate, because the percentage of nonrespondents who received the materials may have been substantially lower. For example, teenagers who had moved would be less likely to have received the materials and also less likely to have been interviewed by phone.

Nevertheless, this is a remarkably high percentage, given the many factors that could have prevented the teenagers from receiving the materials—addresses could have been incorrectly entered, respondents could have moved with no forwarding address, parents or other household members could have intercepted the mailing (and indeed did so, in at least a few cases) and respondents could have received them but not remembered. The fact that 72 percent recalled having received the pamphlet strongly suggests that using brokers' lists of teenagers' names is a successful means of at least reaching them.

By definition, members of the control group were not sent the materials. Nevertheless, three percent of that group recalled obtaining materials. These data represent errors of some kind: The respondents may have received materials from some other organization, their memories may have been incorrect or errors may have been made in the interview or data analysis.

Of the teenagers in the experimental group who recalled having received the pamphlet, nine in 10 claimed that they had actually read it. Moreover, about one-third of those showed it to their friends, and almost half talked about it with their friends (Table 2).

In general, only about 25 percent of male teenagers in the United States have discussed both sex and birth control with their parents at any time.[20] However, half of the males who recalled receiving the pamphlet actually showed it to their parents, and about one-third discussed it with them. This suggests that the pamphlet may have initiated or increased communication between parents and teenagers. Although there are no data on the length or depth of these conversations, the pamphlet seems to have had a surprising impact, given that it is such a small intervention.

That many teenagers shared the pamphlet with their friends or parents (or both) suggests that they were interested in it. Both by reinforcing the materials and by giving other teenagers access to them, such behavior may have increased the impact of the pamphlet.

It is also important to point out that there was little backlash from parents over the mailing. It was sent to more than 12,000 teenagers (only some of whom were included in the experimental group and interviewed), but only about 30 parents (0.3 percent of the mailings overall) wrote letters to complain about it.

## Background Characteristics of Groups

Much of the following analysis will compare the control group with the entire experimental group, with those who actually recalled having received the materials and with those who read them. (The most rigorous means of analysis is the comparison of the control group with the entire experimental group; because membership in these groups was determined randomly, any statistically significant differences should therefore have been caused by the intervention.)

The data in Table 1 demonstrate that the background characteristics of the control and experimental groups were essentially the same. Any observable differences are very small, and none are statistically significant at $p<0.05$. However, additional comparisons are warranted. Any possible impact is obviously diluted by inclusion of the teenagers who did not remember receiving the pamphlet or who had not read it. Unfortunately, excluding teenagers who had not received or read the pamphlet partially destroys the rigor of the experimental design, by allowing self-selection to enter into the analysis. For example, teenagers who had chosen to read the

**Table 2. Among all members of experimental group and among those who recalled receiving the mailing, percentage who used the pamphlet in various ways**

| Receipt and use | All (N=985) | Recalled getting mailing (N=713) |
|---|---|---|
| Read pamphlet | 66 | 91 |
| Talked with friends about pamphlet | 31 | 44 |
| Showed pamphlet to friends | 24 | 35 |
| Talked with parents about pamphlet | 26 | 36 |
| Showed pamphlet to parents | 34 | 50 |

**Table 3. Mean scores of teenage males in experimental and control groups on knowledge and attitude tests, for all males and for sexually active males**

| Measure | Control | | Experimental | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | All | | Recalled getting mailing | | Read mailing | |
| | Score | N | Score | N | Score | N | Score | N |
| **Knowledge** | | | | | | | | |
| All | 80 | 1,033 | 83*** | 985 | 84*** | 713 | 85*** | 652 |
| Sexually active | 81 | 548 | 84*** | 555 | 85*** | 403 | 86*** | 371 |
| **Attitudes†** | | | | | | | | |
| Probability of getting an STD | | | | | | | | |
| All | 3.60 | 1,032 | 3.58 | 983 | 3.59 | 712 | 3.60 | 650 |
| Sexually active | 3.60 | 548 | 3.57 | 553 | 3.58 | 401 | 3.59 | 369 |
| Perceived cost of getting an STD | | | | | | | | |
| All | 4.90 | 1,032 | 4.91 | 985 | 4.92 | 713 | 4.92 | 652 |
| Sexually active | 4.90 | 548 | 4.92 | 555 | 4.92 | 403 | 4.93 | 371 |
| Probability of getting someone pregnant | | | | | | | | |
| All | 4.00 | 1,032 | 4.06 | 984 | 4.08 | 712 | 4.11* | 651 |
| Sexually active | 3.91 | 548 | 3.96 | 554 | 3.96 | 402 | 4.00 | 370 |
| Perceived cost of getting someone pregnant | | | | | | | | |
| All | 4.49 | 1,029 | 4.48 | 983 | 4.50 | 711 | 4.51 | 651 |
| Sexually active | 4.40 | 547 | 4.41 | 553 | 4.42 | 401 | 4.44 | 370 |
| Perceived benefit of using a condom | | | | | | | | |
| All | 4.48 | 1,032 | 4.51 | 985 | 4.55* | 713 | 4.58*** | 652 |
| Sexually active | 4.47 | 548 | 4.54 | 555 | 4.55 | 403 | 4.58** | 371 |

*Difference between experimental and control groups significant at $p < 0.05$.

**Difference between experimental and control groups significant at $p < 0.01$.

***Difference between experimental and control groups significant at $p < 0.001$.

†Attitudes were scored on a 1–5 scale; the more socially desirable scores are the higher scores.

pamphlet may have been more likely to have had intercourse than were teenagers who had received the pamphlet but had not read it. The impact of such self-selection is likely to be small, however, because most teenagers who remembered receiving the pamphlet had read it, and most teenagers who had not read it also did not remember ever receiving it. One way to determine statistically whether self-selection has occurred is to compare the characteristics of the teenagers who read the pamphlet with those of the others—either the control group or the entire experimental group. Notably, on the various background variables, there were no statistically significant differences between those who had received the pamphlet, those who had read it and those who were in the control group.

The teenagers who remembered receiving the pamphlet, as well as those who had read it, were slightly more likely ever to have had intercourse than were those in the control group, but this difference was not statistically significant. Moreover, the teenagers who remembered both receiving and reading the pamphlet were just as likely to have had sexual intercourse as were the teenagers in the entire experimental group.

### Impact on Knowledge and Attitudes

The interview included an 11-item knowledge test. Respondents could answer "true," "false" or "don't know" in reply to short statements based on important facts presented in the pamphlet. According to the data presented in Table 3, the mean score among members of the experimental group was greater than that of the control group. Although the difference was not large (83 percent vs. 80 percent), it was statistically significant at $p<0.001$. The same difference was found among sexually active teenagers.

Teenagers who recalled receiving the pamphlet had a slightly higher mean score (84 percent), as did those who had actually read it (85 percent). Among sexually active teenagers as well, the difference between those who had read the pamphlet and the control group was five percentage points. Again, all of these differences are statistically significant; none are large, but they are quite respectable, given the simplicity and low cost of the intervention, as well as the length of time between receipt of the pamphlet and the interview (about four weeks, on average). These findings are also consistent with the perceptions of the young men themselves: About 64 percent of those who had read the pamphlet claimed that they had learned something from it (not shown). The pamphlet might have had a greater impact upon knowledge if both the pamphlet and the test had included more difficult questions and less widely known facts; however, both were focused on basic facts.

The interview also measured five different attitudes—a teenager's perception of the probability of his acquiring an STD if he is sexually active, the social or psychological cost of his getting an STD, the probability of his getting someone pregnant if he has intercourse without using birth control, the cost of his getting someone pregnant and the cost and value of his using condoms. (Each scale was based on 2–5 items. In turn, each item was presented in a Likert-type scale, with possible responses ranging from "strongly agree" to "strongly disagree.")

There were no substantively or statistically significant differences between the entire experimental and control groups on any of the five attitudinal scales. However, there were a few very small differences between the control group and the members of the experimental group who remembered receiving or reading the pamphlet. Those who had read it were no more likely to think they would get an STD or to worry about getting one, but they were slightly more likely to believe that they might get someone pregnant and to believe that using a condom is worth the trouble. Although these differences were very small, they were statistically significant (at $p<0.05$ and $p<0.001$, respectively). Among sexually active teenagers, those who had read the pamphlet were significantly more likely than the control group ($p<0.01$) to believe that the value of condoms outweighed the hassle of obtaining and using them. These small differences may have been produced by the teenagers' having read the pamphlet, or they may have been due to self-selection (i.e., those who were more concerned about pregnancy and STDs may have been more likely to remember both receiving and reading the pamphlet).

In general, these data indicate that the pamphlet had either a very limited impact or no impact at all on attitudes related to sexual behavior. This is not surprising, since attitudes are more stable than knowl-

**Table 4. Percentage of teenage males in control and experimental groups who ever had coitus and, among those who had, the mean number of acts of intercourse**

| Sexual activity | Control | Experimental | | |
|---|---|---|---|---|
| | | All | Recalled getting mailing | Read mailing |
| **Ever had coitus** | | | | |
| % | 54 | 57 | 57 | 57 |
| N | 1.016 | 972 | 735 | 668 |
| **Acts of coitus†** | | | | |
| Mean no. | 15.5 | 13.5 | 13.6 | 13.2* |
| N | 528 | 531 | 388 | 357 |

*Difference between experimental and control groups significant at p<0.05.

†Among those who had ever had coitus.

edge, and are not likely to be affected by a single pamphlet. Moreover, most of the attitude scores of the control group were already very high (e.g., a 4.9 on the 1–5 scale of the perceived cost of catching an STD, or a 4.5 on the scale for the perceived cost of getting someone pregnant). It would have been rather hard to improve on these scores; such a "ceiling effect" might have prevented detection of an otherwise significant improvement.

### Impact on Sexual Activity And Method Use

It is unlikely that a single pamphlet would have a significant impact on whether or not a teenager has intercourse or on how often he has it. Nevertheless, there is a small possibility that straightforward information about STDs will lead a few teenagers to delay or reduce their sexual activity. The interviewers first asked whether or not each respondent had ever had intercourse. Because most teenagers who had ever had intercourse had undoubtedly done so before receiving the pamphlet, it should not have had an impact, and, as expected, it did not (Table 4).

The interviewers also asked sexually active respondents how many times they had ever had intercourse. If the pamphlet had caused some teenagers to delay or reduce their sexual activity, the mean number of acts of sexual intercourse should be lower among the experimental groups than among the control group. This is consistent with the results shown in Table 4: Both the entire experimental group and those who had read the pamphlet reported having engaged in fewer acts of intercourse. However, only among those who had actually read the materials was this difference statistically significant. Most of the differences between the experimental and control groups were due to differences among the teenagers in both groups who reported having engaged in 50 or more acts of intercourse. It is especially unlikely that such very active teenagers would have reduced their frequency of sexual intercourse by a large amount in such a short period of time as a result of having received the pamphlet. Still, the finding is a positive one: It is possible that the mailing slightly reduced the sexual activity of very active males, and even if the mailing did not reduce sexual activity, the pamphlet and offer of free condoms certainly did not cause an increase in teenagers' sexual activity.

An important goal of the pamphlet and the order coupon was to increase condom use. Accordingly, all sexually active respondents were asked whether they would be more likely to use condoms if they could order them by mail. About 54 percent of sexually active respondents said they would be more likely to use condoms if they could be ordered by mail. However, such claimed intentions about using birth control are notoriously unreliable.

During the telephone interview, the young men were also asked if they had ever used condoms or each of several other methods of birth control. The results (not shown) indicate that receipt of the pamphlet did not increase the proportion of sexually active teenagers who had ever used a condom, or any other method of birth control: The proportion who had ever used each method was essentially the same for the control group, the entire experimental group and the subgroups who had recalled receiving or reading the pamphlet.

Questions about ever-use of birth control could obscure changes in more recent behavior induced by the pamphlet. Consequently, the interviewers also asked whether a respondent had used a method of birth control during his last act of intercourse and, if so, what kind. Again, as the data in Table 5 indicate, there was no difference between the entire experimental group and the control group. There was a small difference in condom use at last intercourse between teenagers who remembered receiving the pamphlet and the control group, but it was not statistically significant. Those who had read the pamphlet were still more likely than the control group to have done so (58 percent vs. 54 percent), but this difference also was not statistically significant. Moreover, the small differences might have been caused by self-selection—teenagers who normally use condoms might have been more likely to read the pamphlet and order coupon.

**Table 5. Percentage of sexually active teenage males in experimental and control groups who used various methods of birth control at last intercourse**

| Method | Control | Experimental | | |
|---|---|---|---|---|
| | | All | Recalled getting mailing | Read mailing |
| | (N=537) | (N=546) | (N=397) | (N=366) |
| Condom | 54 | 53 | 56 | 58 |
| Pill | 16 | 16 | 16 | 15 |
| Withdrawal | 10 | 11 | 11 | 11 |
| Rhythm | 1 | 1 | 1 | 1 |
| Other | 3 | 1 | 1 | 1 |
| None | 21 | 20 | 18 | 17 |

Note: Percentages do not add to 100 because some teenagers used more than one method.

### Impact on Ordering and Using Condoms

All sexually active teenagers who had used a method of birth control were read a list of places where contraceptives can commonly be obtained, and were asked if they had ever obtained a method of birth control from any of them. According to the data in Table 6, those in the entire experimental group and in the subgroup who had read the materials were much more likely to have ordered condoms from a mail-order firm than were teenagers in the control group (seven and nine percent vs. one percent). These differences are statistically significant at p<0.001.

That the recipients' greater use of mail-order firms is undoubtedly a result of the order coupon is confirmed by the fact that 66 of the 985 males who were interviewed had used the coupon to order free con-

**Table 6. Percentage of sexually active teenage males in experimental and control groups who ever obtained a method of family planning from various sources**

| Source | Control | Experimental | | |
|---|---|---|---|---|
| | | All | Recalled getting mailing | Read mailing |
| | (N=547) | (N=554) | (N=402) | (N=370) |
| FP clinic | 13 | 12 | 12 | 12 |
| Private MD | 16 | 16 | 16 | 16 |
| Hospital clinic | 8 | 5 | 5 | 5 |
| Drugstore | 70 | 72 | 72 | 71 |
| Grocery store | 12 | 13 | 13 | 12 |
| Friend or relative | 38 | 38 | 38 | 38 |
| Vending machines | 14 | 14 | 13 | 12 |
| Mail-order house | 1 | 7*** | 9*** | 9*** |
| Other | 1 | 0 | 1 | 1 |

***Difference between experimental and control group significant at p<0.001.

doms, representing seven percent of the entire experimental group and nine percent of those who had actually read the pamphlet.* These findings are further confirmed by the fact that of the more than 12,000 teenagers who were sent the mailing (only some of whom were in the experimental group and actually interviewed), 766 (or six percent) ordered free condoms. Normally, direct-mail advertisers operate with response rates of 1–3 percent. Thus, the response rates observed here are impressive, both as expressions of demand and as measures of a significant intervention. Furthermore, of the 66 males who ordered condoms and were interviewed, 85 percent said they had done so because ordering by mail was easy. In other words, for a small but significant segment of this experimental group, condoms became more accessible.

Notably, the materials had no impact on the proportion who purchased contraceptives from other sources. The percentages of teenagers in the experimental and control groups who obtained birth control from other sources were nearly identical, and none of the differences were statistically significant.

There were no differences in the source of the method used during most recent intercourse. In fact, only one percent of the teenagers in any of the experimental groups had used a condom obtained from a mail-order house during their last act of intercourse. This is not surprising, because only 11 of the 66 males reported having received and used the condoms they had ordered, and records on when coupons were received demonstrate that most could not have received and used the condoms before the interviewing began.

To understand more clearly the impact of ordering condoms, reinterviews were conducted seven months later with the 66 males who ordered condoms. Forty-seven (71 percent) had engaged in intercourse before ordering condoms and 19 (29 percent) had not. During their last act of intercourse prior to ordering condoms, 38 of the 47 (81 percent) had used condoms. Thus, condom use among those who had had intercourse before placing an order was already high, and may not have been significantly increased by ordering condoms. Of the 19 males who had not had intercourse by the time of the first interview, 11 had initiated intercourse by the time of the second interview; seven had used condoms at first intercourse. Thus, the coupons may have facilitated these teenagers' use of condoms at first intercourse. On the other hand, these seven individuals certainly represent a small part of the entire experimental group.

## Conclusions

This experiment described here has demonstrated a mechanism for reaching teenage males through mass mailing. The procedures used here were relatively inexpensive (about 30 cents per individual) and could be replicated easily and quickly, with the names of literally millions more teenagers currently included on mailing lists.

The telephone interview data indicate that when the names of male teenagers were obtained from list brokers and when pamphlets with order coupons for free condoms were sent to them, a large percentage of teenagers did in fact receive the pamphlets, read them and even shared and discussed them with friends and parents. Moreover, the recipients' knowledge increased a small but significant amount as a result. Attitudes did not change, but 6–7 percent ordered free condoms, a very high response rate by direct-mail standards. Moreover, more than a quarter of those who ordered condoms did so before first intercourse, indicating that mailings can reach some teenage males early enough. Reported use of condoms at last intercourse did not change, in part because many of the males were already using condoms and because too little time had passed between the mailing and the first telephone interview.

Overall, these results indicate that programs for mailing informational and promotional materials to teenagers should be further developed and evaluated. It is probably possible to produce more effective materials and to design more effective campaigns. For example, a more intensive mailing campaign, perhaps one involving a series of mailings and follow-up phone calls combined with larger numbers of free condoms, could be implemented. Family planning organizations, especially regional and national programs, might consider such an approach as a supplement to other teenager-oriented outreach efforts.

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*The 66 males who had ordered condoms generally reflected the background characteristics of the entire sample.

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# Expanding Medicaid Coverage for Pregnant Women: Estimates of the Impact and Cost

*By Aida Torres and Asta M. Kenney*

## Summary

An estimated 361,000 pregnant women are expected to be newly eligible for Medicaid coverage when all states raise the income ceiling for such coverage to 100 percent of the federal poverty level by 1990, as Congress has mandated. According to a methodology for projecting the effects of recent congressional changes in the Medicaid program, about 64 percent of these women would be otherwise uninsured, at least for maternity care, and the rest would have some insurance, so Medicaid would be the payer of last resort. Congress has also given states the option to cover pregnant women with incomes from 100 to 185 percent of poverty. If all states were to do so, another 552,000 women would become eligible, 29 percent of whom would otherwise have no insurance coverage for maternity care. The estimate of newly eligible women with incomes below 185 percent of poverty represents 24 percent of the 3.8 million women who give birth in the United States each year.

Under the 100-percent-of-poverty ceiling, the estimated number of poor women eligible for coverage ranges from 4,000 or fewer in 18 states and the District of Columbia to 41,000 in California and Texas. At 185 percent of poverty, the number ranges from 4,000 or fewer in 11 states and the District of Columbia to more than 90,000 in California and Texas. Eight states have already elected to extend Medicaid coverage to the 185-percent-of-poverty ceiling. The number of newly eligible women in those states is less than 10 percent of the number with incomes from 100 to 185 percent of poverty who would become eligible nationwide under such a standard.

The overall federal and state expenditures to provide maternity and newborn care, excluding neonatal intensive care, to all the newly eligible women below 100 percent of the poverty level is estimated to be $654 million per year, about 87 percent of which would go to cover services to uninsured women. Another $658 million would provide Medicaid coverage to women with incomes from 100 to 185 percent of poverty; 62 percent of this sum would be for uninsured women. The federal government would pay about 59 percent of Medicaid expenditures for the newly eligible women and the states would pay about 41 percent.

## Introduction

The U.S. infant mortality rate ranks 18th among 36 industrialized nations.[1] Of every 1,000 babies born alive in this country, 10.4 die in the first year of life; the rate among black babies is almost twice as high as that among white infants.[2]

Numerous studies indicate that early and regular prenatal care is associated with reduced infant mortality and more favorable outcomes on other key measures of health, such as low birth weight. For example, infants born to mothers who begin prenatal care in the first trimester of pregnancy have an infant mortality rate of 9.7 deaths per 1,000 live births; the rate rises to 12.5 per 1,000 among infants whose mothers begin care after the first trimester, and it jumps to 48.7 per 1,000 among babies whose mothers obtain no prenatal care during their pregnancy.[3] Ten percent of babies whose mothers obtain insufficient prenatal care weigh less than 5.5 pounds and 13 percent of them are born prematurely, compared with five percent and eight percent, respectively, among infants whose mothers get more care.[4]

The Institute of Medicine has concluded that the provision of prenatal care is highly cost-effective; each dollar spent on prenatal care for high-risk women saves $3.38 in the cost of care for low-birth-weight infants.[5] However, a third of pregnant women do not get sufficient prenatal care, and evidence indicates that many of these are women who would have difficulty paying for health care because they are uninsured. Compared with the average among all American women, uninsured women are twice as likely to obtain their prenatal care late in pregnancy and four times as likely to obtain no prenatal care.[6] Indeed, according to the Institute of Medicine, financial barriers are the main reason that women fail to obtain adequate prenatal care.[7] Approximately 26 percent of women of reproductive age have no insurance for maternity care. About 64 percent have private insurance to cover these costs, and another 10 percent are covered by government programs such as Medicaid and those for military dependents and retired military personnel.[8]

Acting largely out of concern about high infant mortality rates in the United States, Congress has significantly expanded Medicaid in recent years so that it can provide broader coverage for pregnant women and infants—coverage that goes beyond the original Medicaid goal of providing health care only for the poorest of the poor.

In 1985, before the new provisions expanding coverage went into effect, Medicaid paid for an estimated 630,000 births—about 17 percent of all births—at a total cost to the federal and state governments of approximately $2 billion, including expenditures for neonatal intensive care.[9] The number of women and infants who might be brought into the program under the new provisions has been of considerable interest, as has the cost of the expanded coverage. This article outlines a

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methodology for making projections and provides national and state-by-state estimates of the numbers of pregnant women who are potentially eligible for Medicaid and of the costs associated with each birth.

**Table 1. Income eligibility levels for Medicaid and for expanded coverage for pregnant women and infants as a percentage of the federal poverty level; and effective date of expanded coverage; all by state, 1988**

| State | Medicaid* | Expanded coverage | |
|---|---|---|---|
| | | % | Date |
| Alabama | 14.6 | 100 | 7/88 |
| Alaska | 77.2 | 100 | 1/89 |
| Arizona | 36.3 | 100 | 1/88 |
| Arkansas | 34.1 | 100 | 4/87 |
| California | 110.5 | † | na |
| Colorado | 52.1 | † | na |
| Connecticut | 87.9 | 185 | 4/88 |
| Delaware | 39.5 | 100 | 1/88 |
| D.C. | 60.1 | 100 | 4/87 |
| Florida | 45.4 | 100 | 10/87 |
| Georgia | 46.6 | 100 | 1/89 |
| Hawaii | 59.9 | 100 | 1/89 |
| Idaho | 37.6 | 67 | 1/89 |
| Illinois | 56.7 | 100 | 7/88 |
| Indiana | 35.7 | 50 | 7/88 |
| Iowa | 65.0 | 150 | 1/89 |
| Kansas | 59.4 | 100 | 7/88 |
| Kentucky | 36.2 | 125 | 10/87 |
| Louisiana | 32.0 | 100 | 1/89 |
| Maine | 71.0 | 185 | 10/88 |
| Maryland | 54.7 | 100 | 7/87 |
| Massachusetts | 90.8 | 185 | 7/87 |
| Michigan | 70.8 | 185 | 1/88 |
| Minnesota | 87.8 | 185 | 7/88 |
| Mississippi | 45.6 | 185 | 10/87 |
| Missouri | 34.9 | 100 | 1/88 |
| Montana | 50.5 | † | na |
| Nebraska | 60.9 | 100 | 7/88 |
| Nevada | 40.9 | † | na |
| New Hampshire | 69.0 | † | na |
| New Jersey | 70.1 | 100 | 7/87 |
| New Mexico | 32.7 | 100 | 1/88 |
| New York | 78.5 | † | na |
| North Carolina | 44.3 | 100 | 10/87 |
| North Dakota | 53.9 | † | na |
| Ohio | 38.3 | 100 | 1/89 |
| Oklahoma | 58.3 | 100 | 1/88 |
| Oregon | 69.2 | 100 | 11/87 |
| Pennsylvania | 55.7 | 100 | 4/88 |
| Rhode Island | 85.7 | 185 | 10/88 |
| South Carolina | 49.9 | 100 | 10/87 |
| South Dakota | 45.3 | 100 | 7/88 |
| Tennessee | 45.2 | 100 | 7/87 |
| Texas | 33.1 | 100 | 9/88 |
| Utah | 85.8 | 100 | 1/89 |
| Vermont | 104.1 | 185 | 10/87 |
| Virginia | 44.3 | 100 | 7/88 |
| Washington | 74.2 | 90 | 7/87 |
| West Virginia | 35.9 | 150 | 7/87 |
| Wisconsin | 85.3 | † | na |
| Wyoming | 44.6 | 100 | 10/88 |

*Includes medically needy program in 36 states and the District of Columbia.

†State has taken no action on expanded coverage.

Note: na = not applicable.

Sources: **column 1**—National Governors' Association, Memorandum from Ian Hill to Interested Parties re. Medicaid Eligibility and Coverage for Pregnant Women, Children and Families, Washington, D.C., Oct. 13, 1988; **columns 2 and 3**—personal communication with Ian Hill, National Governors' Association, Nov. 2, 1988.

## Changes in Medicaid

Medicaid is financed jointly by the federal government and the states largely to pay for health care provided to low-income persons who receive cash assistance from the Aid to Families with Dependent Children (AFDC) and the Supplemental Security Income programs. The states reimburse health care providers—such as physicians, hospitals, clinics, laboratories and pharmacies—for the medical services and supplies furnished to eligible persons. The states, in turn, are reimbursed by the federal government for a portion of their expenditures, ranging from 50 percent in the more affluent states to 80 percent in the poorest states.[10] The federal government has established guidelines for eligibility and benefits, but states have broad discretion to choose among various options, so that Medicaid programs vary dramatically from state to state.

Originally, federal law intended that eligibility be limited mostly to recipients of cash assistance. Poor women of childbearing age were usually eligible for cash assistance only if they were single parents.* Therefore, poor pregnant women who were married or expecting a first child were generally ineligible for Medicaid. In 1984, Congress required states to extend Medicaid coverage to pregnant women expecting their first child and to pregnant married women in families in which the principal wage earner was unemployed, provided that both of these groups fell below income ceilings set by the states.[11] Congress also required that Medicaid cover the health care costs of the newborn infants in eligible families.[12] Legislation requiring Medicaid coverage of married pregnant women in families with some income from employment was enacted in 1986.[13] These legislative changes meant that family structure could no longer exclude pregnant women from Medicaid eligibility, if they met the income criteria.

Because states have the latitude to set their own income qualifications for cash assistance, the ability of pregnant women (and others) to qualify for Medicaid has always varied from state to state. Table 1 shows the income ceilings in effect in July 1988; they ranged from a low in Alabama of 15 percent of the federal poverty level ($1,415 a year for a family of three) to 111 percent in California ($10,707). Nationally, eligibility averaged 57 percent of the federal poverty level.†

With changes effective in April 1987, Congress began to free Medicaid from the income restrictions of the cash assistance programs, at least where pregnant women and infants are concerned: It allowed states to extend Medicaid eligibility to all pregnant women and infants through one year of age whose family incomes fell below the federal poverty level.[14] Beginning in July 1988, it extended that cutoff to 185 percent of the poverty level, but allowed states to charge women above 150 percent of poverty a modest premium.[15] Although these two extensions were voluntary on the part of the states, Congress has since mandated that states must cover pregnant women and infants up to 75 percent of poverty by July 1989 and up to 100 percent by July 1990.[16] Congress has also expanded Medicaid coverage for children older than one. This article, however, deals only with the potential impact of coverage for pregnant women and their newborns under the 100 percent and 185 percent of poverty provisions; it does not discuss Medicaid costs beyond the neonatal period.

As of January 1989, 42 states and the District of Columbia had taken advantage of one or another of the congressional provisions and expanded coverage for pregnant women and infants, as Table 1 shows. Vermont is one of the states that has opted for expanded coverage, although it had income eligibility criteria above the federal poverty level before introduction of the new options. California, which has not expanded coverage, also had an eligibility ceiling that was already above the poverty level.‡ Only three of the states that have increased eligibility (Idaho, Indiana and Washington) set ceilings that were below the federal poverty level. Twelve states (including California) now have ceilings above the poverty level, eight of them as high as 185 percent of poverty.

## Methodology

Since the first provision expanding the Medicaid income ceiling, several methodologies have been suggested to help states calculate the costs of increasing coverage to 100 percent of poverty. All of them have based their estimates of the size of the newly eligible Medicaid group on data from the annual Current Population Survey (CPS), which includes information on the health insurance status of the U.S. population by sex, age and poverty status.

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*Under the welfare reform legislation enacted by Congress in 1988, eligibility for cash assistance will change in the 1990s.

†In 1988, the federal poverty level was $9,690 for a family of three.

‡As this article was going to press, California opted for coverage up to 185 percent of poverty, effective in July 1989.

Using 1985 CPS data, the Congressional Budget Office (CBO) calculated the number of women and infants who would become eligible for Medicaid coverage nationally and in each of the four census regions, and it estimated the federal government's share of the costs at various eligibility ceilings below 150 percent of poverty.[17] To calculate the number of pregnant women eligible at each ceiling, the CBO estimated national fertility rates for poor women and applied these to the number of women of childbearing age whose total family income was below the stipulated poverty level for at least one month in 1984 but who were ineligible for AFDC in their state. Because some states provide Medicaid to persons with incomes above the cash assistance ceiling if they are medically needy,* the calculations were adjusted to exclude the number of pregnant women estimated to be already covered by this provision. Calculations were also done to estimate newly eligible infants and children aged 1–4 and 5–17.

The projected Medicaid costs were then calculated by applying participation rates and average costs per pregnant woman and child to estimates of the newly eligible: The CBO assumed that 90 percent of newly eligible women who have no insurance would enroll under the new Medicaid provisions, as would 60 percent of those with insurance; comparable assumptions for infant enrollment were 65 percent and 50 percent, respectively. Maternity care costs were based on the average cost of all hospital care per day and on state Medicaid information. Average cost estimates for infant care were based on total federal and state health care costs per person-year, adjusted for differences for specific age-groups. The CBO assumed that Medicaid would pay for covered services for the uninsured and for 25 percent of costs for the insured.

In a report prepared for the Southern Governors' Association and the National Governors' Association, data from the 1984, 1985 and 1986 CPS were used to calculate the average annual number of women aged 15–44 with incomes below 100 percent of poverty who were not already covered by Medicaid in each state.[18] State-specific general fertility rates were applied to this population base to produce estimates of the number of newly eligible pregnant women and infants. A later report extended these estimates up to 185 percent of poverty.[19] The reports provide suggestions on how individual states can refine the data using more localized information than that contained in the CPS.

In the present analysis, the methodology is essentially the same as that used in the report prepared for the governors' associations, but it incorporates differences in fertility rates by poverty status and more recent CPS data. It also takes into account changes in the insurance status of women during pregnancy, state data on Medicaid expenditures for maternity care and other findings of an extensive analysis of the financing of maternity care.[20]

In addition, this analysis explicitly divides the potentially eligible population into two groups. The first, for which Medicaid will provide primary coverage, is newly income-eligible women aged 15–44 who are not covered by public or private insurance and those covered by private insurance but not for maternity care. The second group, for which Medicaid might provide partial coverage, is newly income-eligible women who have insurance for maternity care but for whom Medicaid could now be a coinsurer and payer of last resort. However, estimates of the number of newly eligible infants and the costs to Medicaid of providing care beyond that given at birth are not included, because little is known about patterns of insurance coverage and Medicaid expenditures for infant care.

In computing eligibility for Medicaid, this analysis relies on the CPS poverty-status distributions, which are based on income, and does not take into account other family resources that are used in computing Medicaid eligibility. In addition, not all persons currently eligible for Medicaid are enrolled in the program; thus, the number of women estimated to be newly eligible includes some who were eligible before any program expansion.

The first step was to calculate the number of women aged 15–44 below 100 percent of poverty and below 185 percent of poverty in each state.† Average state-by-state proportions of women in this age-group with incomes below the designated levels were estimated based on the 1985–1987 CPS data and applied to 1985 estimates of the female population aged 15–44 in each state that were obtained from the commercial firm Market Statistics; the results were adjusted to agree with national population projections by the Bureau of the Census. CPS data were also used to determine the proportion of women in each poverty group with no insurance and with private insurance, and these proportions were applied to corresponding numbers of women in each poverty group.

The next step was to estimate the number of pregnant women in each poverty group by state. CPS data on the poverty status of all children younger than one were used to compute the national rate of births per 1,000 women aged 15–44 (the general fertility rate) by poverty status. State-specific 1985 general fertility rates were adjusted by the ratio of the national rate for women at each level of poverty to the total U.S. general fertility rate. National ratios were used because state-level CPS data involve small numbers of infants. These ratios indicate that the fertility rate for women with incomes below 100 percent of poverty is 54 percent higher than that for all women and the fertility rate for women with incomes below 185 percent of poverty is about 42 percent higher. This methodology assumes that there were as many pregnant women as there were live births; no adjustments were made for multiple births or for miscarriages. The former would result in lower estimates and the latter in higher estimates of the number of newly eligible women. In addition, because estimates of the newly eligible are based primarily on survey data, they are subject to sampling errors.

CPS data indicate that 17 percent of all women of reproductive age have no insurance, either private or governmental, and 70 percent have private health insurance, while findings from the 1985 National Hospital Discharge Survey show that 15 percent of new mothers are uninsured and 64 percent are privately insured at the time of delivery.[21] The discrepancy between all women of reproductive age and new mothers exists because some women become eligible for Medicaid only after pregnancy occurs. State estimates of the number of pregnant women potentially eligible for Medicaid coverage under the new provisions were adjusted, therefore, to exclude an estimated number of uninsured women and privately insured who become covered by Medicaid as a result of pregnancy.

The final step involved estimating the Medicaid expenditure per birth for newly eligible women and newborns. A survey of Medicaid agencies in 1985[22] supplied state-by-state data on the average amount Medicaid reimbursed hospitals per birth for maternity and healthy-newborn care in

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*Under Medicaid, states may opt to establish "medically needy" programs; these cover persons with incomes up to one-third higher than the state's cash assistance standard, after their medical bills have been deducted from income.

†Copies of the detailed methodology and estimates for six cutoff levels—100, 125, 150, 175, 185 and 200 percent of poverty—are available from The Alan Guttmacher Institute.

1984–1985. (Costs associated with neonatal intensive care were not included because of the unavailability of data in most states.) The averages for each state were adjusted for the increase in Medicaid payment per hospital inpatient between 1984 and 1986. Published data on Medicaid reimbursement per birth for physician services in 1986[23] were used to estimate Medicaid expenditures for physician care.

**Table 2. Estimated additional number (in 000s) of pregnant women aged 15–44 who would be eligible for Medicaid coverage under income ceilings of 100 percent and 185 percent of poverty, by insurance status; additional percentage of births that would be eligible; and estimated average Medicaid expenditure per birth; all according to state**

| State | 100% of poverty | | | 185% of poverty | | | % of all births | | Average cost per birth |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Uninsured | Insured | Total | Uninsured | Insured | 100% | 185% | |
| **United States** | **361** | **230** | **131** | **913** | **391** | **522** | **10** | **24** | **$2,400** |
| Alabama | 10 | 6 | 4 | 23 | 9 | 14 | 17 | 39 | $1,810 |
| Alaska | 1 | 1* | †.* | 2 | 1* | 1* | 7 | 17 | $3,880 |
| Arizona | 9 | 5 | 4 | 18 | 8 | 9 | 15 | 30 | $2,400‡ |
| Arkansas | 6 | 5 | 2* | 14 | 7 | 7 | 18 | 39 | $2,140 |
| California | 41 | 28 | 13 | 96 | 48 | 48 | 9 | 20 | $2,400§ |
| Colorado | 5 | 3 | 2* | 12 | 5 | 6 | 9 | 21 | $1,870 |
| Connecticut | 1 | 1* | 1* | 6 | 2* | 4 | 4 | 16 | $3,110 |
| Delaware | 1 | †.* | †.* | 2 | 1* | 1* | 8 | 23 | $2,280‡ |
| District of Columbia | 1 | 1* | †.* | 2 | 1* | 1* | 4 | 11 | $2,750‡ |
| Florida | 19 | 13 | 6 | 48 | 23 | 25 | 12 | 29 | $3,260 |
| Georgia | 10 | 6 | 4 | 23 | 9 | 14 | 10 | 23 | $3,260 |
| Hawaii | 2 | 1* | 1* | 4 | 1* | 3 | 8 | 22 | $2,300‡ |
| Idaho | 3 | 2* | 1* | 7 | 3 | 4 | 20 | 43 | $1,470 |
| Illinios | 14 | 8 | 5 | 37 | 14 | 22 | 8 | 21 | $2,130 |
| Indiana | 9 | 5 | 4 | 22 | 9 | 14 | 11 | 28 | $2,460‡ |
| Iowa | 5 | 3 | 2* | 12 | 4 | 8 | 11 | 28 | $1,630 |
| Kansas | 5 | 3 | 2* | 11 | 4 | 7 | 12 | 28 | $2,560 |
| Kentucky | 7 | 5 | 2* | 18 | 8 | 10 | 14 | 35 | $1,940 |
| Louisiana | 13 | 9 | 4 | 28 | 14 | 14 | 17 | 35 | $1,450 |
| Maine | 1 | 1* | †.* | 4 | 1* | 3 | 7 | 26 | $2,320‡ |
| Maryland | 4 | 2 | 1* | 11 | 5 | 6 | 6 | 19 | $3,510 |
| Massachusetts | 4 | 2 | 2 | 11 | 4 | 7 | 5 | 14 | $3,690 |
| Michigan | 10 | 6 | 4 | 26 | 10 | 16 | 7 | 19 | $3,490 |
| Minnesota | 5 | 2 | 3 | 15 | 4 | 11 | 8 | 22 | $2,770 |
| Mississippi | 8 | 6 | 3* | 18 | 8 | 10 | 20 | 43 | $1,780 |
| Missouri | 7 | 5 | 3* | 19 | 8 | 11 | 9 | 25 | $2,820 |
| Montana | 2 | 1* | 1* | 5 | 2* | 3 | 15 | 38 | $2,410‡ |
| Nebraska | 3 | 1* | 1* | 8 | 2* | 5 | 10 | 30 | $2,380 |
| Nevada | 1 | 1* | 1* | 4 | 2* | 3 | 10 | 28 | $2,860 |
| New Hampshire | 1 | †.* | †.* | 2 | 1* | 2 | 4 | 15 | $1,600 |
| New Jersey | 5 | 3 | 2* | 14 | 5 | 8 | 5 | 13 | $3,390 |
| New Mexico | 5 | 3 | 2* | 10 | 5 | 5 | 16 | 35 | $3,270 |
| New York | 17 | 11 | 6 | 51 | 21 | 30 | 7 | 20 | $2,310 |
| North Carolina | 10 | 6 | 4 | 25 | 10 | 16 | 11 | 28 | $3,520§ |
| North Dakota | 2 | 1* | 1* | 4 | 1* | 2 | 12 | 28 | $2,200‡ |
| Ohio | 12 | 7 | 5 | 35 | 13 | 22 | 7 | 22 | $3,540 |
| Oklahoma | 7 | 5 | 2* | 15 | 8 | 7 | 13 | 30 | $1,780 |
| Oregon | 5 | 3 | 2* | 12 | 5 | 6 | 12 | 29 | $2,500** |
| Pennsylvania | 10 | 6 | 4 | 32 | 11 | 21 | 6 | 20 | $2,580 |
| Rhode Island | 1 | †.* | †.* | 2 | 1* | 2* | 5 | 16 | $2,180‡ |
| South Carolina | 5 | 3 | 2* | 14 | 6 | 9 | 11 | 30 | $1,980 |
| South Dakota | 2 | 1* | 1* | 4 | 2* | 3 | 16 | 37 | $2,190‡ |
| Tennessee | 8 | 5 | 3* | 21 | 9 | 13 | 11 | 30 | $4,270** |
| Texas | 41 | 29 | 12 | 92 | 46 | 47 | 13 | 29 | $1,950 |
| Utah | 5 | 3* | 2* | 13 | 4 | 9 | 13 | 34 | $2,420‡ |
| Vermont | 1 | †.* | †.* | 2 | 1* | 1* | 7 | 25 | $2,120 |
| Virginia | 6 | 4 | 2* | 17 | 7 | 10 | 7 | 21 | $2,040 |
| Washington | 6 | 4 | 2* | 14 | 6 | 8 | 8 | 18 | $2,620 |
| West Virginia | 3 | 2* | 1* | 9 | 4 | 5 | 13 | 35 | $1,580 |
| Wisconsin | 5 | 3* | 3* | 16 | 5 | 11 | 8 | 22 | $2,940 |
| Wyoming | 1 | 1* | †.* | 3 | 1* | 1* | 12 | 30 | $2,410‡ |

*Relative standard error > 0.25. †Fewer than 500.

‡Estimated expenditures based on 1984–1985 mean hospital expenditures for reporting states adjusted for inflation and on 1986 Medicaid reimbursement rates for physician fees.

§Estimated expenditures based on average 1983–1984 total hospital expenditures minus 1984–1985 published reimbursement rates for physician fees, adjusted for inflation, and on 1986 Medicaid reimbursement rates for physician fees.

**Estimated expenditures based on average 1984–1985 total hospital expenditures minus 1984–1985 published reimbursement rates for physician fees, adjusted for inflation and on 1986 Medicaid reimbursement rates for physician fees.

Note: Uninsured includes those who have private insurance that does not cover maternity care.

## Findings

When all states extend Medicaid coverage for pregnant women to 100 percent of the federal poverty level—as Congress has mandated by 1990—an estimated 361,000 poor women will be newly eligible. As can be seen in Table 2, about 230,000 of these women are currently uninsured or have private insurance that does not cover maternity care, and 131,000 do have insurance but may be partially covered by Medicaid. If eligibility criteria were fully expanded nationwide to include pregnant women with incomes between 100 percent and 185 percent of poverty, another 552,000 women would qualify, for a total of 913,000 newly eligible women. Mainly because this analysis takes into account differences in fertility rates by poverty status, these numbers of newly eligible women are 8–10 percent higher than those given in the report to the governers, which estimated an addition of 327,000 pregnant women below 100 percent of poverty and 847,000 below 185 percent of poverty.

As the table indicates, relatively more of the women between 100 percent of poverty and 185 percent of poverty have private insurance, so that uninsured women make up 64 percent of the newly eligible under the lower ceiling and 43 percent under the higher ceiling.

Some proposals for Medicaid suggest that coverage for pregnancy-related care should be made available to all uninsured women, regardless of income. This would add another 183,000 pregnant women with incomes above 185 percent of poverty to those eligible for Medicaid coverage.

Under the 100-percent-of-poverty ceiling, the additional number of poor women estimated to be eligible for coverage ranges from 4,000 or fewer in 18 states and the District of Columbia to 41,000 in California and Texas. At 185 percent of poverty, the number ranges from 4,000 or fewer in 11 states and the District of Columbia to more than 90,000 in California and Texas. The number eligible in each state reflects many things, especially population size. That the estimates of potentially eligible women include some who already qualify is best illustrated by California, where Medicaid eligibility limits exceeded 100 percent of the federal poverty level before expansion of the program.

The 53,000 potentially eligible women with incomes between 100 and 185 percent of poverty in the eight states that have expanded coverage up to 185 percent of poverty (see Table 1) account for fewer than 10 percent of the number of women nationwide who could become eligible under such a standard. In 15 southern states plus the District of Columbia that have not adopted the 185 percent standard,* the number of potential new enrollees with incomes between 100 and 185 percent of poverty is estimated to be 215,000, of whom 31 percent are without insurance; this proportion compares with 23 percent of similar women in the eight states that have expanded Medicaid to the upper limit. The four states in the Northeast region with ceilings that do not reach 185 percent of poverty could expect another 66,000 newly eligible women, 26 percent of whom would be uninsured. Ten states in the North Central region would add 106,000 more women if they adopted the higher standard, 25 percent of whom are uninsured. None of the states in the West have adopted the 185-percent-of-poverty standard; if they did, 114,000 women would be newly eligible, 33 percent of them uninsured.

Nationwide, the number of newly eligible women with incomes below 185 percent of poverty represents 24 percent of the 3.8 million women who give birth in the United States each year, compared with 10 percent if the standard is limited to 100 percent of the federal poverty level. Under the lower standard, the additional births that would be covered by Medicaid range from four percent of all births (in Connecticut, the District of Columbia and New Hampshire) to 20 percent (in Idaho and Mississippi); under the higher standard, the range would be from 11 percent (in the District of Columbia) to 43 percent (in Idaho and Mississippi).

The estimated average Medicaid expenditure per birth, shown in the last column of Table 2, includes reimbursement for physician fees and hospital charges for the mother and newborn (excluding specialized infant services such as neonatal intensive care). The weighted average Medicaid expenditure for maternity care in the United States is $2,400 per birth.† Expenditures are lowest in Louisiana ($1,450 per birth) and highest in Tennessee ($4,270).

The total additional Medicaid expenditures at each eligibility level can be calculated by multiplying the average cost per birth by the estimated number of newly eligible pregnant women in each state. For women without insurance, Medicaid could be expected to pay the average amount. For women with private insurance, Medicaid would reimburse only for those expenses not already covered; however, little is known about the extent to which Medicaid reimburses for services as the payer of last resort. The Congressional Budget Office suggests that nationally these costs amount to about 25 percent of Medicaid expenditures per pregnancy.[24] Estimates of the total cost assume that all Medicaid-eligible women participate in the program and apply the 25 percent assumption to those with private insurance. The extent to which they actually participate depends on state efforts to inform women of the availability of Medicaid, the availability of service providers and other factors.

The overall federal and state expenditures to provide maternity and newborn care to all the newly eligible women below 100 percent of the poverty level are estimated to be $654 million annually. (These numbers differ slightly from what would be obtained from national averages because they are derived from state-specific calculations.) About 87 percent of this total ($569 million) would be spent to cover services for uninsured women, and 13 percent ($85 million) would go toward services for women with some private insurance. Another $658 million would be needed to provide Medicaid coverage to women with incomes from 100 to 185 percent of poverty; 62 percent of this ($405 million) would be for uninsured women and 38 percent ($253 million) for women with private insurance.

The federal government's share of Medicaid costs varies from 50 percent in 11 states and the District of Columbia to 80 percent in Mississippi.[25] Nationally, its share of costs would be an estimated $388 million under the 100-percent-of-poverty standard and another $385 million to cover expansion up to 185 percent of poverty; these figures are about 59 percent of the total expenditures for newly eligible women. State governments would be responsible for the remainder, $266 million and $272 million, respectively.

One of the oft-cited barriers to the participation of service providers in Medicaid is low reimbursement. A study of maternity and newborn care among women covered by Medicaid estimated that the average national charge is $3,200 when the baby is born healthy.[26] Yet the average Medicaid payment in 1986 for care for the mother and a healthy baby was only $2,400. Although the level of Medicaid reimbursement varies dramatically from state to state, there are few states where the reimbursement approximates the average charge. If Medicaid were to cover all of the charge,‡ the expenditures for newly eligible women under a 100-percent-of-poverty standard would increase from $654 million to $827 million. At the 185-percent-of-poverty level, expenditures would go from $1.312 billion to $1.640 billion if Medicaid were to cover the full charge. The federal government's share in each case would be $494 million and $973 million, respectively, while the states would pay $333 million and $667 million.

None of these estimates include the high cost of neonatal intensive care. The Office of Technology Assessment reports that from four to six percent of newborns require such care;[27] the national average charge for a mother and baby on Medicaid has been calculated at about $4,490 when intensive care is taken into account.[28] If charges for intensive care are included in the national estimates, Medicaid expenditures for newly eligible women would reach $1.212 billion ($728 million paid by the federal government and $484 million by the states) under a 100-percent-of-poverty standard and $2.399 billion ($1.431 billion paid by the federal government and $969 million by the states) if 185 percent of poverty is the standard.

These estimates of Medicaid costs to cover the newly eligible women go beyond an estimated $1.512 billion that Medicaid pays for maternity and healthy newborn care to 630,000 women already eligible. Another $504 million would be needed to cover these women and their

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*The national average was weighted by the distribution of Medicaid births in each state in 1984–1985 (see: A. M. Kenney et al., "Medicaid Expenditures for Maternity and Newborn Care in America," *Family Planning Perspectives*, **18**:103, 1986).

†The states by region are: South—Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia (and the District of Columbia); Northeast—Connecticut, New Hampshire, New Jersey, New York, Maine, Massachusetts, Pennsylvania, Rhode Island and Vermont; North Central—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin; West—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.

‡Data on average charges are available by region only, and the calculations that follow are based on how a state's payments differ from its regional average charge, not the national average charge.

babies, assuming Medicaid were to cover full charges, and an additional $813 million would be needed to cover full charges for intensive care given to the babies of women already eligible.

## Discussion

Congress enacted the Medicaid provisions that are the subject of this report in the spirit of making maternity and infant care readily available to low- and marginal-income persons. Most states have opted voluntarily to expand coverage to women and infants not part of the traditional Medicaid clientele, indicating a genuine desire to reach these populations.

This article makes the optimistic assumption that all potentially eligible women will enroll. Experience in seven states that were among the first to implement an expanded Medicaid program for pregnant women and infants sheds some light on how realistic this assumption may be. Based on preliminary data, the ratio of actual enrollees to the number of women eligible, as projected by individual states, ranged from 63 percent to 189 percent and averaged 107 percent; however, three of the seven states experienced actual enrollments that were about 90 percent of their projections.[29] Clearly, estimating actual use of Medicaid-financed services is not easy, and figures are likely to vary significantly from state to state. In addition, actual participation in the first year of program implementation is likely to be lower than in subsequent years.

The promise of the new provisions will only be fulfilled, however, if states go beyond the mere expansion of eligibility to make Medicaid a viable financing system. Since people generally assume that eligibility for Medicaid is tied to receipt of cash assistance, states need to conduct aggressive outreach activities to inform pregnant women of the availability of an expanded Medicaid program and how and where to apply for it. Traditionally, most states have done relatively little outreach, often devoting more attention to keeping ineligible persons out of the program than to bringing eligible ones in.[30] There are indications that states are beginning to implement a variety of outreach activities in conjunction with the new Medicaid provisions,[31] and such efforts will need to be widespread. In states where the availability of Medicaid coverage is not widely promoted, the estimates of utilization in this article are almost certainly high.

A critical concomitant to an expanded Medicaid program is a quick and easy application process. All too often, women who wish to apply for Medicaid must pay several visits to the local welfare office to complete long and complicated application forms and furnish the requisite documentation. Then, they are often confronted with a month's wait (or longer) to find out if they qualify.[32] Such procedures can all but preclude entry into prenatal care in the crucial first trimester of pregnancy. They are also likely to deter the working poor, or anyone who would find it difficult to make several visits to the welfare office, from participating in the program.

Along with the various Medicaid amendments concerning income standards for pregnant women and infants, Congress enacted other provisions paving the way for a shorter, simpler application process. Most notably, it has given states the leeway to determine eligibility for pregnant women and infants based on income alone, rather than income and assets. In addition, service providers are permitted to presume that pregnant women seeking prenatal care who seem to meet eligibility standards are in fact eligible; the providers will be reimbursed for prenatal care given for up to 45 days until a final determination is made. Not all states that are expanding Medicaid coverage for pregnant women and infants have adopted these provisions, however: Seventeen states have retained the assets test and 32 states have not adopted presumptive eligibility.

Once an individual qualifies for Medicaid, she ought to be able to find a service provider relatively easily. Yet, 44 percent of physicians providing obstetric services will not accept Medicaid patients.[33] Realistic reimbursement rates, then, are an important concomitant of expanded eligibility, particularly in light of the rapidly escalating malpractice premiums for obstetricians. In addition, the reduction of bureaucratic red tape could do much to enhance provider participation. Such actions as speeding up reimbursement, returning or rejecting claims less frequently and assuring providers of reimbursement for medically necessary services could go a long way toward bringing greater numbers of providers into Medicaid.

Ultimately, if the goal is to assure access to care for women and infants throughout the country, a uniform income ceiling for eligibility will be needed. Also needed is a system that encourages women to seek care early and regularly during pregnancy.

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# Comment

## The Need for National Pregnancy Mortality Surveillance

*By Hani K. Atrash, Tedd V. Ellerbrock, Carol J. R. Hogue and Jack C. Smith*

In 1979, the United States Department of Health and Human Services identified maternal mortality as one of the country's health priority areas in need of further improvement.[1] From 1940 to 1980, the maternal mortality rate in the United States declined 98 percent, from 376 deaths per 100,000 live births to 9.2 per 100,000.[2] Since 1980, however, the rate has remained relatively stable.

To achieve further reductions in maternal mortality and to determine the risk factors and preventability of maternal death, we need reliable and accurate information. In 1988, the Centers for Disease Control (CDC), after consulting with the American College of Obstetricians and Gynecologists and state health departments, began a national pregnancy mortality surveillance to meet the need for a program for detecting all pregnancy-related deaths (including those related to abortion, ectopic pregnancy and trophoblastic disease). The CDC will conduct case investigations and initiate epidemiologic analysis by relying on a combination of both national and state vital statistic reporting systems, as well as on several investigative approaches that have been used successfully to discover misclassified maternal deaths. The following discussion describes each reporting system and approach that the national pregnancy mortality surveillance system will employ and concludes by describing how combining these approaches can be expected to improve the quality and quantity of information collected regarding maternal deaths.

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### The Reporting Systems And Investigative Procedures

The National Center for Health Statistics (NCHS), which up until now has been the only source of national data on maternal deaths, compiles its information from death certificates forwarded by the states. Because death certificates often provide insufficient information about deaths and because the NCHS adheres strictly to internationally developed standard code rules for selecting the underlying cause from the multiple causes listed on the death certificate, national statistics understate the true numbers and rates of maternal death. A study revealed that 20 percent fewer maternal deaths were reflected in the national vital statistics for 1974–1978 than were identified by state offices[3] of vital statistics. Furthermore, vital statistics reports do not provide data sufficiently detailed for epidemiologic research; for maternal mortality cases, only race and cause of death are routinely published.[4] Although other information may be obtained from public-use mortality computer tapes, such information is limited to that available on the death certificates—birthplace, age, marital status, place of death, residence and whether an autopsy was performed.

State vital statistics, which are also derived from death certificates, are often updated based on autopsy results or an investigation by the state's maternal mortality study committee after the number of maternal deaths has been reported to the NCHS. However, state vital statistics have also been found to understate maternal deaths by 17–73 percent.[5] Despite the limitations mentioned above, vital statistics remain the most important mechanism for identifying maternal deaths.

In order to improve the identification of maternal deaths, some states use vital record linkage to match records of reportable pregnancy outcomes (live birth or fetal death) with death certificates of women of reproductive age. This approach identifies some maternal deaths for which pregnancy information was missing on the death certificate. In Georgia (1975–1976) and Washington (1977–1981), more maternal deaths were identified by this method than had been previously reported (36 percent and 112 percent, respectively).[6] However, the limitations of vital record linkage include the inability to identify maternal deaths when a pregnancy outcome is not reported (as is the case with early fetal death, induced abortion and ectopic pregnancy) or when a common identifier (such as address) is not the same on the pregnancy outcome record as on the death certificate.

A search for maternal deaths, conducted by screening death certificate information either manually or by computer, may help identify some maternal deaths that have been misclassified. However, the usefulness of such a search is limited to identifying those cases in which a pregnancy or pregnancy-related condition was recorded on the death certificate. A computer search can use a multiple-cause-of-death computer tape, whereas a manual search is necessary if computer-stored mortality information is coded only for the underlying cause of death. In fact, manual screening of death certificates themselves may be useful, because handwritten marginal notes on the death certificate (from the autopsy or case investigation) are frequently used to update the cause of death. In one study in Puerto Rico, researchers identified 13 (76 percent) more maternal deaths for the period 1978–1979 than had been reported by vital statistics.[7]

Another approach used to identify misclassified maternal deaths, but which has major practical limitations, is the review of medical records and autopsy and coroner's reports for all deaths of women of reproductive age. Its advantage is that maternal deaths can be identified regardless of either the presence of pregnancy information on the death certificate or a record of the pregnancy outcome. In one instance, a review of these reports identified an additional 32 maternal deaths, which represented a 188 percent increase in case finding.[8] However, this approach is very expensive and requires the approval of several parties, including health departments, hospital administrators, physicians and sometimes the patient's next of kin. For the sake of efficiency, an alternative to reviewing all medical records is to exclude cases with causes of death that are unlikely to have been associated with pregnancy, such as unintentional injury and malignancy.

State maternal mortality study committees have facilitated accurate classification of maternal deaths by investigating cases and identifying maternal deaths previously misclassified. Committees from various states reported that 37 percent more maternal deaths occurred in 1980–1985 than had been reported by national statistics.[9] However, meaningful epidemiologic analysis and interpretation are difficult for these committees because of the declining level of maternal mortality and the very small number of maternal deaths in individual states. Moreover, fear of litigation is making committees increasingly reluctant to investigate and classify deaths. Consequently, the number of these committees has declined in recent years; only 27 states had active maternal mortality study committees in 1988.[10]

## The CDC Surveillance System

The approaches for identifying and investigating maternal deaths as described above have not been uniformly employed or coordinated at a national level. However, national pregnancy mortality surveillance may overcome these limitations by combining these approaches so that they supplement one another. We expect that the number of deaths identified will be greater than that reported by the vital statistics systems alone, and that the investigation of these deaths will improve the data quality and the accuracy of classification and make epidemiologic analysis more meaningful. This surveillance has not been in place long enough to determine its advantages and limitations; however, we expect it to function as well as abortion mortality surveillance, a similar surveillance system operated by the CDC since 1972 to investigate abortion-related deaths.

The success of abortion mortality surveillance has been principally due to its use of multiple sources of reporting and information. Multiple reporting sources have provided higher numbers of possible abortion-related deaths to be investigated than were reported by the vital statistics systems. For example, of 538 possible abortion-related deaths from 1972 to 1982 identified by the CDC, only 69 percent were obtained from national statistics and state health department reports; the remainder came from individuals and other sources, such as published case histories and medical and hospital committees.

Multiple sources of information not only improved the detection of abortion-related deaths, but also improved the accuracy in classifying these deaths. The CDC's investigation of these 538 deaths led to definitive classification of 403 deaths (75 percent) as abortion-related, compared with 269 classified as such by national vital statistics and 337 by state health departments. Moreover, whereas 116 (43 percent) of the deaths reported by national vital statistics were unclassified as to whether the abortion was legal, illegal or spontaneous, abortion mortality surveillance classified all but one of the 403 that it identified.[11] In addition, the CDC reclassified as not abortion-related 22 percent of the deaths that were reported to be abortion-related by the national vital statistics and the state health departments.

In conclusion, our discussion indicates the need for improved and coordinated approaches to the study of maternal deaths that will provide sufficient information to develop strategies to prevent maternal mortality. Because the CDC national pregnancy mortality surveillance combines multiple sources of reporting and information, it enhances accurate detection and classification of maternal deaths, accurate determination of maternal mortality rates and sufficient data for meaningful epidemiologic analysis. We expect that the new surveillance activity will improve our understanding of the factors leading to pregnancy-related mortality and will contribute to the decline in pregnancy-related deaths.

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# Research Note

## Strategies for Evaluating Adolescent Pregnancy Programs

*By Josefina J. Card and Robert Timothy Reagan*

### Program Evaluation

Research in the 1970s showed that teenage pregnancy and childbearing often have multiple negative consequences for the future personal and professional lives of young parents. Consequently, many programs have been established either to prevent teenage pregnancy or to provide care to pregnant and parenting adolescents. However, in spite of the millions of dollars allocated to such projects, their effectiveness remains largely unknown.[1] Adequate evaluation of the impact of intervention programs requires adherence to scientific standards in the development and management of such programs and the allocation of sufficient funds to the evaluation component.[2]

The scientific evaluation of an intervention program requires translating program objectives into measurable outcomes, and comparing outcomes among program participants with those among a control group that is similar in every way to participants except for the presence of the intervention. For many programs, the cost of obtaining comparison data from a control group can be prohibitive. In this research note, we describe three methods for obtaining comparison data for a program evaluation—random assignment, matched-group comparison and comparison with existing data. In particular, we will demonstrate how the third method can be designed and implemented as a relatively inexpensive source of comparison data.*

Typical objectives of teenage pregnancy programs include lowering the incidence of sexual activity, increasing the use of contraceptives among the sexually active, lowering the incidence of premarital pregnancy, improving health outcomes at birth and increasing high school completion rates among teenage parents. Whether any of these objectives is met cannot be determined unless the relevant outcome is measured both in the presence of the intervention and in its absence. For example, if one objective is to increase contraceptive use among the sexually active, then the evaluator should measure use among program participants (usually via a survey) and compare these results with those found among similar nonparticipants.

Any program evaluation must first define precisely who constitutes a "participant." Is it anyone who enters the program, anyone who completes a specified part of the program, anyone who completes all of the program, or anyone who completes the program and stays in contact with the evaluators through follow-up periods? Ideally, one of the first three definitions would be used, but too often the last is used. Participants who remain in a program and are easy to track down for follow-up surveys are likely to be different from those who leave a program or who prove difficult to track down; unless the same type of person is weeded out of the control group, a valid comparison cannot be made, and a form of selection bias known as attrition results. An evaluator who attempts to follow up all clients who enter a program in a one-year period, but is able to reach only a quarter of them, has a considerable attrition problem. Therefore, rather than attempt to collect data from all participants, an evaluator of a large program would be advised to select a target sample—a 25 percent random sample of all individuals who enter the program in a one-year period, for example—and then expend all necessary resources to collect follow-up data from that sample. The evaluator who collects information from at least 80 percent of the target sample is not likely to have an attrition problem, because most of the clients excluded from follow-up will have been excluded at random, not simply because they were the most difficult participants from whom to collect information. Of course, the target sample must be large enough to allow statistical detection of differences between the participant and comparison groups.

Because it is advisable to consider as a participant anyone who enters a program, the extent to which each person participates is also important. This measure may be labeled the participant's dosage. Individuals who remain in a program to the end receive a higher dose of the intervention than those who leave early. Persons who participate fully by attending all sessions or by completing all exercises receive a higher dose of the intervention than those who do not participate in all components. Evaluators must remember, however, that dosage is often associated with preexisting characteristics of the participant; high-dosage participants may show better outcomes simply because those who are predisposed to better outcomes join in more enthusiastically.

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### Methods of Comparison

We will briefly discuss two methods of statistical comparison—random assignment and matched-group comparison—and then develop the third, comparison with existing data.

- *Random assignment.* Scientifically, the ideal way to test the effectiveness of an intervention is to conduct an experiment in which subjects are randomly assigned to one of two groups—the treatment group, which receives the intervention, and the control group, which is similar to the treatment group in all respects except for the absence of the intervention. The laws of chance that govern random assignment to treatment and control groups ensure that subjects in the two groups are not likely to differ systematically on any preintervention characteristics. If subjects were allowed to choose their own group, the problem of selection bias would arise—those who chose the treatment group would likely be different from those who chose the control group. Therefore, it is usually not appropriate to compare program participants with people in the same community who choose not to enter the program. Further, those who choose to participate may be the type of people who will have better outcomes anyway.

Unfortunately for science, randomly assigning individuals to treatment and control groups is often not feasible or even desirable, because doing so involves withholding services from those selected to be controls.

- *Matched-group comparison.* Another alternative is to find a group of people who are as similar to participants as possible, but to whom the program is not available. (Evaluators should not assume, however, that people in the comparison group have not received other interventions.) In evaluations of adolescent programs, such a group could be composed of students in another school or teenagers in another town. This approach is often referred to as the matched-group approach to comparison. With such a comparison, the treatment and comparison groups must be tested for preexisting differences that could explain postintervention differences. For comparisons to be valid, the two groups should be shown to be similar in terms of demographic characteristics as well as with respect to outcome-related measures prior to the intervention. (Unfortunately, it is often difficult, if not impossible, to compare both groups on *all* variables in which they might differ.) If there are preexisting differences, the evaluator will have to control for them statistically. After the intervention, if both groups are measured again and the results differ, the evaluator has some evidence that the treatment had an effect.

Ideally, both the treatment and the comparison groups are tested twice—before and after the intervention. Testing only the treatment group before and after the intervention is not sufficient, because outcomes that are attributed to the impact of the intervention may in fact be due to confounding variables, such as the passage of time and multiple exposures to the same test. (Randomly dividing participants into two groups, one of which is tested before the intervention and one of which is tested after, and then controlling for age in an analysis of covariance or multiple regression can help alleviate problems caused by confounding variables.)

- *Comparison with existing data.* Conducting a program evaluation always requires the expenditure of resources, and resources are often limited. Rather than spreading resources thin by collecting data from both treatment and comparison groups (and ending up with serious attrition problems), it is often better to concentrate resources on collecting good data from the treatment group only (including dropouts and graduates) while relying on data that already exist for comparison.

One strategy for exploiting existing data is to use data from the school or region that the intervention is hypothesized to affect, but that were collected before implementation of the intervention. For example, birth weights of infants born to teenagers in Anytown in the five years preceding the commencement of a comprehensive care program can be compared with those of infants born to teenagers in Anytown in the five years after the initiation of the program. Notice that this type of comparison is different from testing the same individuals twice; teenagers in one five-year period are not likely to be teenagers in the next five-year period. The advantage of this approach is that it minimizes selection bias, but the disadvantage is that implementation of the program is confounded with the passage of time: Differences in outcomes may be attributable to other social changes, or even demographic changes, in Anytown's population.

A second strategy for exploiting existing data is to use information that has been collected from other teenage pregnancy programs. Unfortunately, however, these data sources allow the evaluator to study only relative effects of different interventions: People involved in any intervention program are likely to do better overall than those who are not exposed to any intervention. Again, statistical tests for preexisting differences between treatment and comparison groups are required.

A third strategy, and the one we develop further here, is to use data from comprehensive, methodologically sound national or regional studies as a comparison. Examples of national data sets in the public domain that contain relevant information on teenagers and their infants are the National Longitudinal Survey of Youth (NLSY), the National Survey of Family Growth (NSFG), the National Survey of Children, the U.S. National Surveys of Young Men and Women, the U.S. National Study of High School and Beyond, and the U.S. National Natality and Fetal Mortality Surveys.

The advantage of using comprehensive national or regional surveys for comparisons is that such studies typically use precise and sophisticated sampling procedures, and the instruments have been thoroughly developed to maximize quality. The disadvantage is that comparison data will necessarily be from an earlier time period than treatment data. However, many of the important national and regional data collections available for comparisons are ongoing surveys repeated every few years; consequently, it is sometimes eventually possible to compare treatment data with national or regional data from approximately the same time period.

In summary, the scientifically ideal method for evaluating a program's effectiveness is to use a true experimental design with random assignment to treatment and control groups. Because this method is often impractical, however, evaluators will want to consider matched-group comparisons. In that case, sufficient resources are necessary to preclude or control for preexisting differences between treatment and control groups and to minimize attrition from both. If sufficient resources are not available to use matched-group comparisons appropriately, then it is often better to concentrate on collecting good data from the treatment group, and to use already existing data from well-conducted studies for comparison. We shall discuss how to prepare such data, and then we shall demonstrate how to use the data for program evaluation.

### Creating Comparison Tables

Let us start with an example: Suppose the mayor of Anytown wants to know how prevalent pregnancy is among teenagers in his town, compared with national norms. A recent survey found that 25 per-

**Table 1. Percentage of school dropouts and sample sizes, by ethnicity and age, according to fertility status, 1979–1984 NLSY**

| Ethnicity and age | Currently pregnant (N=721) | | Mothers of year-old babies (N=1,199) | |
|---|---|---|---|---|
| | % | N | % | N |
| **Black** | | | | |
| 14 | 55.1 | 3 | na | 0 |
| 15 | 19.1 | 9 | 42.6 | 5 |
| 16 | 23.4 | 34 | 35.7 | 24 |
| 17 | 31.7 | 47 | 38.4 | 49 |
| 18 | 30.5 | 72 | 51.0 | 81 |
| 19 | 32.5 | 93 | 44.1 | 139 |
| 20 | * | * | 31.6 | 145 |
| **Hispanic** | | | | |
| 14 | na | 0 | na | 0 |
| 15 | 19.0 | 5 | na | 0 |
| 16 | 56.1 | 12 | 28.8 | 3 |
| 17 | 60.7 | 26 | 81.2 | 25 |
| 18 | 57.1 | 44 | 77.7 | 45 |
| 19 | 59.3 | 62 | 63.4 | 79 |
| 20 | * | * | 61.8 | 100 |
| **White** | | | | |
| 14 | na | 0 | na | 0 |
| 15 | 80.0 | 7 | 100.0 | 2 |
| 16 | 60.1 | 29 | 84.6 | 15 |
| 17 | 57.5 | 57 | 75.5 | 36 |
| 18 | 41.3 | 96 | 70.6 | 95 |
| 19 | 29.5 | 125 | 43.3 | 156 |
| 20 | * | * | 33.1 | 200 |

*Currently pregnant 20-year-olds are not included in the table because they were not teenagers at the birth of their child.

Note: In this table, na = not applicable (meaning that there were no individuals of this age, race and fertility status in the comparison sample).

cent of women aged 15–19 in Anytown have had at least one pregnancy. Since 15 percent of teenagers aged 15–19 nationwide have had a pregnancy,[3] it looks at first glance as if teenage pregnancy is more prevalent in Anytown than it is nationally. However, Anytown is an urban community, and the national proportion of urban teenagers who have ever been pregnant is 16 percent; consequently, the gap between the proportion in this town and the national average is one percentage point less than originally thought. Further, the community is about half Hispanic, one-quarter black and one-quarter white. National proportions of teenagers who have ever been pregnant among those ethnic groups are 34 percent, 25 percent and 11 percent, respectively. Therefore, if the community were typical, 26 percent of teenagers in the town could be expected to have ever been pregnant ([1/2 x 0.34] + [1/4 x 0.25] + [1/4 x 0.11] = 0.26). So the 25 percent of teenage women in Anytown who have ever been pregnant is a proportion that is not so different from a *comparable* national norm.

This example shows that it is not enough to use global national figures for statistical comparison. The evaluator should stratify national statistics according to demographic categories that may be associated with the results. Doing so, of course, may require some effort on the part of the evaluator; the savings in time and money come from the fact that the comparison data have already been collected. (Several tables that cover 37 antecedent and outcome variables essential to most evaluations of primary prevention and care programs for teenagers are now publicly available.[4])

When preparing tables of comparison statistics, the evaluator should follow four steps: Select one or more national or regional data sets; identify important demographic covariates; determine dependent variables of interest; and calculate cell statistics for the table (proportions or means for the demographic subgroups and dependent variables).

- *Select one or more national or regional data sets.* Choosing a data set for statistical comparison requires careful consideration to ensure that the comparison data set includes respondents similar to the program's clients. It must also include the same independent and dependent variables as does the treatment data set. For example, let us suppose an evaluation of school dropout rates among teenage mothers in a hypothetical care program called Mom-in-School is undertaken. The NLSY will provide an excellent source of comparison data. The NLSY is an annual survey carried out among a cohort of 12,686 Americans who were born in the years 1957–1964 (and who were 14–22 years old at the first survey in 1979). The survey was originally set up to examine the work force, but gradually included other types of information, such as fertility data. The NLSY is a very valuable source of data because of its sample size, comprehensiveness and high retention (each year, over 90 percent of the original cohort are interviewed).
- *Identify important demographic covariates.* At a minimum, three demographic variables are important to the analysis—ethnicity, age and fertility status. Fertility status should be broken down into currently pregnant women and mothers of year-old babies; these two groups correspond to preintervention and postintervention status in the treatment group.
- *Determine dependent variables of interest.* The relevant variables from the NLSY are quite similar from survey year to survey year. Although the NLSY contains no information that indicates whether the respondent is a dropout, it does identify respondents who have completed high school or are currently enrolled in school.

**Table 2. Percentage of school dropouts and sample sizes, by ethnicity and age, according to fertility status, Mom-in-School Program**

| Ethnicity and age | Currently pregnant (N=152) | | Mothers of year-old babies (N=156) | |
|---|---|---|---|---|
| | % | N | % | N |
| **Black** | | | | |
| 14 | 57.1 | 7 | na | na |
| 15 | 30.0 | 30 | 33.3 | 6 |
| 16 | 22.6 | 31 | 16.0 | 25 |
| 17 | 07.1 | 14 | 32.1 | 28 |
| 18 | 00.0 | 1 | 15.0 | 20 |
| 19 | na | na | 60.0 | 5 |
| 20 | na | na | na | na |
| **Hispanic** | | | | |
| 14 | na | na | na | na |
| 15 | 47.4 | 19 | na | na |
| 16 | 50.0 | 18 | 16.7 | 12 |
| 17 | 66.7 | 15 | 27.3 | 22 |
| 18 | 100.0 | 1 | 37.5 | 16 |
| 19 | na | 0 | 60.0 | 5 |
| 20 | na | na | na | na |
| **White** | | | | |
| 14 | na | na | na | na |
| 15 | 33.3 | 3 | na | na |
| 16 | 44.4 | 9 | 25.0 | 4 |
| 17 | 100.0 | 4 | 00.0 | 3 |
| 18 | na | na | 66.7 | 9 |
| 19 | na | na | 00.0 | 1 |
| 20 | na | na | na | na |

Note: In this table, na = not applicable (meaning that for these combinations of age and race there was either no participant in the study sample or no participant in the comparison sample).

Dropout rates can be inferred by linking these two variables: If the respondent is not in school *and* is not a high school graduate, then she is a dropout. It is possible to create an analogous procedure for each survey year to ascertain a respondent's dropout status at each survey.

- *Calculate cell statistics for the table.* As shown in Table 1, dropout rates are calculated for each ethnic group and single year of age by fertility status. For ethnicity, only blacks, Hispanics and whites are included because there are too few members of other groups in the NLSY for reliable stratified statistics. Respondents are divided by fertility status according to whether they are currently pregnant or are mothers of one-year-old babies. Age is shown in increments of one year from 14 to 19 for pregnant women and from 14 to 20 for mothers of one-year-old babies.* Three levels of ethnicity, two levels of fertility status and six

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*Evaluators must remember that subjects may be included multiple times in the resulting table. For example, a woman who is pregnant in 1980 may be a mother of a year-old baby in 1981 and may be pregnant in 1981. Nonetheless, evaluators should use as many data as are available for each cell in order to increase the reliability of the results.

**Table 3. School dropout rates among Mom-in-School participants and NLSY respondents, by fertility status**

| Fertility status | All | Dropout | In school or graduated |
|---|---|---|---|
| **Currently pregnant** | | | |
| Total | | | |
| % | 100.0 | 36.7 | 63.3 |
| N | 873 | 320 | 553 |
| Mom-in-School | | | |
| % | 100.0 | 38.8 | 61.2 |
| N | 152 | 59 | 93 |
| NLSY | | | |
| % | 100.0 | 36.2 | 63.8 |
| N | 721 | 261 | 460 |
| **Mothers of year-old babies*** | | | |
| Total | | | |
| % | 100.0 | 50.9 | 49.1 |
| N | 1,355 | 690 | 665 |
| Mom-in-School | | | |
| % | 100.0 | 28.8 | 71.2 |
| N | 156 | 45 | 111 |
| NLSY | | | |
| % | 100.0 | 53.8 | 46.2 |
| N | 1,199 | 645 | 554 |

*Differences are statiscally significant at $p<0.001$.

Note: For currently pregnant, $\chi^2 = 0.31$ and $\phi = 0.02$; for mothers of year-old babies, $\chi^2 = 32.18$ and $\phi = 0.15$.

or seven levels of age yield 39 cells: Dropout rates from the NLSY data should be calculated for each cell. These calculations may be done separately for each survey year, and the results aggregated across survey years.

## Using Comparison Tables

Suppose Mom-in-School is an urban care program for pregnant teenagers, and one goal is to encourage young mothers to stay in school. To determine whether the program is successful at keeping its participants in school, the evaluator will compare participants one year after delivery with NLSY respondents who are mothers of year-old babies. (Similar analyses can be done with two-year postdelivery rates, though these are not included here.)

For the purpose of evaluation, anyone who takes part in three counseling sessions is considered a participant. Two hundred twenty-five teenagers meet this criterion. The evaluator is able to survey 84 percent of the participants at one year postdelivery, and 77 percent at two years.

Four steps are involved in comparing data from program participants with those from a demographically stratified comparison group: Determine the analogous demographic characteristics of the study sample; obtain the relevant statistic (dependent variable—in this example, the overall dropout rate) from the sample; calculate the appropriate comparison statistic by using the study sample's demographics to weight the data in the comparison table; and statistically compare the result from the study sample with that of the comparison group.

- *Determine the demographic characteristics of the study sample.* Because subjects in the comparison group are classified according to age, ethnicity and fertility status (Table 1), subjects in the study sample must be classified in the same way. In a check for selection bias, Mom-in-School participants at program intake are compared with NLSY subjects pregnant on the survey date. To make the analysis more precise, those Mom-in-School participants for whom either intake or one-year follow-up information is unavailable are excluded from consideration. Approximately 87 percent of Mom-in-School participants are either black, Hispanic or white; because these are the ethnic categories used for the comparison table, only those program participants who fall into these categories are considered. Teenagers aged 14–19 at intake and those aged 14–20 at one-year follow up will be analyzed, because these ages match those in the comparison table. Subcategories for whom there are no data in the comparison table, such as 15-year-old Hispanic mothers of one-year-olds, must be omitted. Table 2 (page 29), structured identically to the comparison table, shows Mom-in-School data.
- *Obtain study sample statistic.* Next, compute a dropout rate for all Mom-in-School participants at intake and at one year postdelivery. To obtain these rates, weight each proportion in Table 2 by the number of participants contributing to it, add these products, then divide the sum by the total number of participants, as follows:

Pregnant at intake—

7(0.571) + 30(0.300) + 31(0.226) + 14(0.071) + 1(0.000) + 19(0.474) + 18(0.500) + 15(0.667) + 1(1.000) + 3(0.333) + 9(0.444) + 4(1.000) =
59; 59/152 = 0.388.

One year after delivery—

6(0.333) + 25(0.160) + 28(0.321) + 20(0.150) + 5(0.600) + 12(0.167) + 22(0.273) + 16(0.375) + 5(0.600) + 4(0.250) + 3(0.000) + 9(0.667) + 1(0.000) =
45; 45/156 = 0.288.

Therefore, the dropout rate for Mom-in-School participants is 39 percent at intake and 29 percent at one year.

- *Calculate comparison statistic, weighted according to the study sample's demographics.* This is a crucial step in the analysis, and it is very important to apply the weighting procedure correctly. For the comparison statistic, compute a weighted average of the proportions in Table 1, using the numbers for the study sample in Table 2 as the weights.

Currently pregnant—

7(0.551) + 30(0.191) + 31(0.234) + 14(0.317) + 1(0.305) + 19(0.190) + 18 (0.561) + 15(0.607) + 1(0.571) + 3(0.800) + 9(0.601) + 4(0.575) =
55.08; 55.08/152 = 0.362.

Mothers of one-year-olds—

6(0.426) + 25(0.357) + 28(0.384) + 20 (0.510) + 5(0.441) + 12(0.288) + 22(0.812) + 16(0.777) + 5(0.634) + 4(0.846) + 3(0.755) + 9(0.706) + 1(0.433) =
84.00; 84.00/156 = 0.538.

Therefore, if the demographic composition of the NLSY were identical to that of Mom-in-School, a dropout rate of 36 percent among currently pregnant teenagers, and of 54 percent among women one year after delivery, would be expected.

- *Statistically compare the result from the study sample with that of the comparison group.* Because we are working with proportions, a chi-square test is used to compare the statistics. First, construct two-by-two contingency tables for each subpopulation—in this case, currently pregnant teenagers and mothers of one-year-old babies (see Table 3). For the comparison sample in these tables, be sure to use the subsample sizes on which the comparison proportions were based (Table 1), rather than the numbers in Table 2 used to weight comparison proportions in computing the comparison statistic.

The results of the chi-square test suggest no difference in dropout rates between Mom-in-School participants pregnant at intake and a comparable national sample of pregnant teenagers. However, one year after delivery, the dropout rate for Mom-in-School participants is about half that of the national sample (29 percent vs. 54 percent), and this difference is statistically significant. Therefore, evidence indicates that the Mom-in-School program is successful at lowering school dropout rates through one year after delivery. Similar analyses could be done with two-year postdelivery dropout rates to investigate whether the beneficial effects of Mom-in-School persist 24 months postdelivery.

Although the example used in this article refers to an evaluation of a care program, the proposed method can also be used to evaluate a pregnancy prevention program. If used carefully, the method is capable of providing statistical comparisons at little cost. However, some cautions

*(Continued on page 32)*

# Documents

## A Measured Response: Koop on Abortion

*In July 1987, President Reagan directed the Surgeon General of the United States, C. Everett Koop, to prepare a report on the health effects of abortion. On January 9, 1989, after reviewing the scientific literature and consulting with scientific and medical experts, as well as with representatives from a broad range of groups concerned with the abortion issue, the Surgeon General issued his findings in a letter to the president. Copies of the letter have been sent to the groups with whom Koop consulted. The letter is reproduced here in its entirety.*

Dear Mr. President:

On July 30, 1987, in remarks at a briefing for Right to Life leaders, you directed the Surgeon General to prepare a comprehensive report on the health effects of abortion on women. It was clear from those remarks that such a report was to cover the mental, as well as the physical, effects of abortion. A review of the scientific literature, the expertise of the Public Health Service and the experience of national organizations with an interest in this issue form the basis for my conclusions.

The health effects of abortion on women are not easily separated from the hotly debated social issues that surround the practice of abortion. Therefore, every effort has been made to eliminate the bias which so easily intrudes even into the accumulation of scientific data. In this study I have purposely avoided any personal value judgment vis-à-vis abortion as a social issue.

I have approached this task as I did in writing the AIDS report which you requested in 1986. Scientific, medical, psychological and public health experts were consulted. I met privately with 27 different groups which had philosophical, social, medical or other professional interests in the abortion issue. The process involved groups such as the Right to Life National Committee, Planned Parenthood Federation of America, the U.S. Conference of Catholic Bishops, the American College of Obstetricians and Gynecologists and women who had had abortions.

In summary of the situation, each year approximately six million women become pregnant; of that number, 54 percent or 3.3 million of those pregnancies are unplanned. Over 1.5 million women, or 25 percent of those pregnant, elect abortion each year. Since the legalization of abortion in 1973, over 20 million abortions have been performed. Even among groups committed to confirming a woman's right to legal abortion there was consensus that any abortion represented a failure in some part of society's support system—individual, family, church, public health, economic or social.

At the time the report was requested, there were those advising you and intimately involved with the social issues of abortion who truly believed that such a report could be put together readily. In the minds of some of them, it was a foregone conclusion that the negative health effects of abortion on women were so overwhelming that the evidence would force the reversal of *Roe* v. *Wade*.

There were also others who truly believed differently. While they acknowledge that any surgical procedure done 1.5 million times a year may have some negative health effects on women, in their minds the positive effects of abortion—release from the unwanted pregnancy—far outweighed the perceived negative results.

It is difficult to label the opposing groups in the abortion controversy. Those against abortion call themselves prolife. On the other hand, those who are not prolife say they are not proabortion; rather, they refer to themselves as prochoice and supporters of a woman's right to choose abortion.

It is also true that some who are prochoice are personally opposed to abortion. It is not clear to them where the lines should be drawn between the right of the fetus and the right of the mother. So the prochoice forces are not monolithic.

Nor are the prolife forces monolithic. Many ardent prolife individuals who are dedicated to preserving the life of the fetus do not consider contraception to be ethically, morally or religiously wrong. But others in the prolife camp do; indeed, some equate contraception with abortion.

I believe that the issue of abortion is so emotionally charged that it is possible that many who might read this letter would not understand it because I have not arrived at conclusions they can accept. But I have concluded in my review of this issue that, at this time, the available scientific evidence about the psychological sequelae of abortion simply cannot support either the preconceived beliefs of those prolife or of those prochoice.

Today, considerable attention is being paid to possible mental health effects of abortion. For example, there are almost 250 studies reported in the scientific literature which deal with the psychological aspects of abortion. All of these studies were reviewed and the more significant studies were evaluated by staff in several of the agencies of the Public Health Service against appropriate criteria and were found to be flawed methodologically. In their view and mine, the data do not support the premise that abortion does or does not cause or contribute to psychological problems. Anecdotal reports abound on both sides. However, individual cases cannot be used to reach scientifically sound conclusions. It is to be noted that when pregnancy, whether wanted or unwanted, comes to full term and delivery, there is a well-documented low incidence of adverse mental health effects.

For the physical situation, data have been gathered on some women after abortions. It has been documented that after abortion there can be infertility, a damaged cervix, miscarriage, premature birth, low-birth-weight babies, etc. But, I further conclude that these events are difficult to quantify and difficult to prove as abortion sequelae for two reasons. First, these events are difficult to quantify because approximately half of abortions are done in freestanding abortion clinics where records which might have been helpful in this regard have not been kept. Second, when compared with the number of abortions performed annually, 50 percent of women who have had an abortion apparently deny having had one when questioned. Further, these events are difficult to *prove* as sequelae of abortion because all of these same problems can and do follow pregnancy carried to term or not carried to term—indeed can occur in women who have never been pregnant previously. Clearly, however, the incidence of physical injury is greater in instances where abortions are performed or attempted by those not qualified to do them or under less than sterile conditions.

I have consulted with the National Center for Health Statistics and Centers for Disease Control about the design of appropriate studies which could answer the questions dealing with the physical and psychological effects of abortion.

There has never been a prospective study on a cohort of women of childbearing age in reference to the variable outcomes of mating. Such a study should include the psychological effects of failure to conceive, as well as the physical and mental sequelae of pregnancy—planned and unplanned, wanted and unwanted—whether carried to delivery, miscarried or terminated by abortion. To do such a study that would be above criticism would consume a great deal of time. The most desirable prospective study could be conducted for approximately $100 million over the next five years. A less expensive yet satisfactory study could be conducted for approximately $10 million over the same period of time. This $10 million study could start yielding data after the first year.

There is a major design problem which must be solved before undertaking any study. It is imperative that any survey instrument be designed to eliminate the discrepancy between the number of abortions on record and the number of women who admit having an abortion on survey. It is critical that this problem of "denial" be dealt with before proceeding with further investigations.

This is where things stand at this moment. I regret, Mr. President, that in spite of a diligent review on the part of many in the Public Health Service and in the private sector, the scientific studies do not provide conclusive data about the health effects of abortion on women. I recommend that consideration be given to going forward with an appropriate prospective study.

Sincerely,

C. Everett Koop, M.D., Sc.D.
Surgeon General, U.S.P.H.S.

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## "Strategies for Evaluating . . ."

*(Continued from page 30)*

are in order. First, since existing comparison data are likely to be from a period prior to the collection of study data, outcomes may have been influenced by historical changes in the population of interest. Second, any time data are summarized in tabular form, some information is lost; analysts with access to original national or regional comparison data may want to base their comparisons on those original data. (However, the costs of such analyses will generally be higher than those associated with using printed tables.) Third, we have suggested using tabular data that are broken down by age and race because these two characteristics are often associated with outcome variables; nevertheless, if a variable that is not accounted for in the stratification of the comparison tables is associated with the outcome variable and the sample differs on this factor from the comparison population, the two groups may differ on unmeasured, yet very relevant variables. Fourth, the sample needs to be compared with the comparison data on antecedent as well as outcome variables; differences in outcome variables will be stronger evidence for program effects if there are no differences on antecedent variables. If there is a difference between the two groups in an antecedent variable, the sample can be reweighted to reflect the frequency distribution of that variable in the comparison population. Finally, entries in the comparison tables that are based on fewer than 25 observations require caution, particularly if they correspond to a large proportion of the sample.

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# DIGEST

## Pill Users Face Increased Risk of Cervical Cancer, But Decreased Risk of Other Genital Cancers

Women who use oral contraceptives are more likely than women who have never used the pill to develop cervical cancer, but are less likely to develop endometrial and ovarian cancer. The incidence of cervical cancer rises steadily and significantly with increased duration of oral contraceptive use; however, the incidence of other genital cancers declines somewhat with increased duration of use. These findings, which are from a large prospective study,[1] confirm other research on the effect of oral contraceptive use on cancer of the uterine cervix[2] and on endometrial[3] and ovarian cancer.[4]

The analysis is based on data collected from May 1968 to April 1987 in the Royal College of General Practitioners' Oral Contraception Study, which originally recruited 23,000 English and Welsh oral contraceptive users and a similar number of nonusers to track their morbidity and mortality. Women are categorized as ever-users (former users plus current users) or never-users of the pill. The researchers determined the relative incidence of disease and death among ever-users and never-users by comparing the morbidity and mortality rates (per 100,000 woman-years) of the two groups of women. The rates are adjusted for age, parity, cigarette consumption and social class at entry into the study; number of previously normal Pap smears; and history of sexually transmitted disease.

Ever-users of oral contraceptives are 1.8 times more likely than never-users to develop invasive cervical cancer and are 2.9 times more likely to develop cervical carcinoma in situ, but are only one-fifth as likely to develop all other cancers of the uterus; these differences are all statistically significant. The incidence of ovarian cancer among ever-users of the pill is three-fifths that among never-users, but the difference is not statistically significant. When the rates for all cancers of the genital tract are combined, the incidence of disease among ever-users is 1.7 times higher than that among never-users; however, if carcinoma in situ of the cervix is excluded from the total, the incidence of invasive genital cancers is similar among ever-users and never-users.

The primary site of invasive genital cancers varies according to pill use. Cervical cancer accounts for 75 percent of all invasive genital malignancies among ever-users—64 percent among women who used the pill for fewer than five years and 88 percent among those who took the pill for more than five years—but for only 31 percent of such malignancies among never-users. On the other hand, ovarian cancer accounts for only 18 percent of invasive genital malignancies among ever-users, but for 35 percent of such malignancies among never-users.

The overall incidence of cervical cancer tends to increase with age, parity, the number of cigarettes smoked and social class. Further, the incidence of carcinoma in situ and invasive cancer of the cervix increases significantly with increasing duration of oral contraceptive use: After more than 10 years of use, the incidence of both cancers is more than four times greater among ever-users than among never-users. By contrast, the incidence of endometrial and ovarian cancers declines with increasing duration of pill use, although the trends are not statistically significant. Among both ever-users and never-users, the incidence of invasive cervical cancer tends to decline with increasing numbers of Pap smears, but the decline is irregular among ever-users.

Mortality patterns are similar to morbidity patterns—a higher proportion of ever-users than never-users die from cervical cancer, but a smaller proportion die from ovarian cancer; however, the differences between the two groups are not statistically significant. Furthermore, the total death rate from all genital cancers is essentially the same among ever-users and never-users.

According to the researchers, their study contains several potential sources of bias, none of which, they contend, seriously compromise their results. They note that 63 percent of the women who originally enrolled in the study were no longer participating by April 1987; however, they point out that since the groups of ever-users and never-users who left the study had almost identical characteristics, their loss should not bias the results. The study does not control for sexual behavior, but the inclusion of a woman's past history of sexually transmitted disease as a potential confounding factor should, they believe, at least partially adjust for differences in exposure to sexually transmitted agents. Furthermore, the investigators point out that data on the use of barrier methods—which may provide protection against cervical cancer among never-users of the pill—were collected at recruitment only: However, if women who reported using barrier methods at recruitment are excluded from the never-users category, the incidence rate of cervical cancer among the remaining never-users is still substantially below that of ever-users.

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# More Than One in Four Married Women Abandon Their Chosen Contraceptive Method Within a Year

More than one-quarter of married women not trying to become pregnant abandon their chosen birth control method within the initial year of use. Of these women, a little more than half switch to a different method, but the remainder stop using any contraceptive whatsoever for at least one month, exposing themselves to the risk of an unintended pregnancy. Equal proportions of black and white women abandon their choice of birth control, but blacks are substantially less likely than whites to find an acceptable alternative. The authors of a report on patterns of contraceptive discontinuation among married women believe that contraceptive discontinuation is rising, perhaps as a result of increasing dissatisfaction among American women over available methods.[1]

For their analysis, the researchers used data from the 1982 round of the National Survey of Family Growth (NSFG), from which they selected a sample of 1,505 currently married women who were fecund, exposed to intercourse and not trying to become pregnant. The investigators calculated 12-month discontinuation probabilities by means of a multivariate life-table approach. Their analysis shows that 28 percent of married women exposed to the risk of but not seeking pregnancy discontinue using their chosen contraceptive within the initial year of use. Spermicides and "other" nonpermanent methods are the most frequently abandoned birth control methods (45 percent discontinue their use within the first year), followed by the diaphragm (30 percent), the condom (29 percent), the pill (26 percent), the IUD (21 percent) and rhythm (16 percent). Over half of those who discontinue using their contraceptive (52 percent) immediately adopt another form of birth control; the remaining 47 percent do not, despite their stated wish to avoid a pregnancy.

Between 50 and 58 percent of the women who discontinue using a birth control method other than rhythm switch to a different contraceptive: Women who stop using over-the-counter methods, such as condoms and spermicides, are slightly more likely to find acceptable alternatives than are women who abandon methods that require a physician's prescription, such as the pill, the IUD and the diaphragm (57–58 percent, compared with 50–55 percent). Among women who cease practicing the rhythm method, in contrast, only 17 percent adopt a different contraceptive shortly after discontinuation. It appears that rhythm users are less likely to perceive any other method as acceptable. The researchers note, however, that the overall probability that a woman will abandon rhythm use is only slightly less than that of the pill or IUD.

Parity, income, contraceptive intent (either to delay or to prevent a birth) and religion all appear not to be associated with discontinuation. However, race (in addition to the particular birth control method and the length of time of its use) is related to the probability both of changing birth control methods and of stopping the practice of contraception. Black women and white women are equally likely to abandon their choice of birth control, but blacks are less likely to switch methods and more likely to discontinue using any contraceptive, for at least a month. However, the relationship between race and discontinuing all birth control use varies by contraceptive method. For example, whereas the monthly risk for abandoning the diaphragm without finding an alternative method within one month is 4.7 times greater for black women than for white women, the monthly risk for discontinuing the IUD without choosing a different method of birth control is 1.2 times greater for white women than for black women.

Age and education affect the probability of stopping birth control use, but they do not affect the probability of method-switching. The monthly risk of discontinuing contraceptive use and not finding an acceptable alternative within at least one month is 2.6 times greater for women under 20 than for women over 30; the monthly risk for women with less than a high school education is 1.6 times greater than that for women with more than 12 years of schooling.

According to the researchers, there is generally a positive association between gross discontinuation rates and estimated use-failure rates. For example, the pill has both a low use-failure rate and a relatively low rate of discontinuation; likewise, spermicides have both a high use-failure rate and a high discontinuation rate. However, rhythm diverges from this pattern: The rates of discontinuation and adoption of an alternative method are substantially lower among rhythm users than is the estimated use-failure rate for this method. The investigators suggest that this finding is yet another indication that for many rhythm users, that method represents the only acceptable contraceptive method.

The researchers note that discontinuation of any contraceptive use by married women who want to avoid a pregnancy "is undoubtedly of short duration," yet a comparison of their findings with those of other researchers suggests that women may increasingly be abandoning particular birth control methods without finding an acceptable alternative within a month. They speculate that women are more dissatisfied with the available contraceptive methods than they had been in the past, and that this dissatisfaction "may underlie both [method] failure and discontinuation experiences."

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# UK Study of FP Patients Highlights Need to Ask Women's Sexual History

In the last two decades, the proportion of sexually active British women who initiated intercourse in their early teens appears to have increased: Data from a survey of clinic attendees across Great Britain shows that one in three teenagers began their sexual careers before age 16, compared with only one in eight women currently in their 20s and one in nine of those in their 30s. Women whose first intercourse occurred early in their lives are more likely than others to have had five or more sexual partners and are more likely to report having intercourse almost daily. Nearly one-quarter of sexually active women have had five or more partners, although the overwhelming majority report having had just one partner within the preceding year. The authors of the study suggest that if women at high risk of contracting sexually transmitted diseases are to be identified, clinic counselors must collect detailed information about their clients' past and current sexual behavior.[1]

Sixty-three family planning clinics throughout England, Scotland and Wales participated in a study conducted by the United Kingdom Family Planning Research Network. An anonymous questionnaire was distributed during one week in February 1987 to all clients while they were waiting to see a health practitioner. Questionnaires from 2,749 sexually active women were analyzed; 16 percent of potential respondents had refused to participate. Information obtained from the women included their age at initial intercourse, the number of sexual partners both in their lives and over the past year, their estimated frequency of sexual intercourse within the previous week, their current contraceptive use, their abortion history and other demographic and reproductive health information.

Seventeen percent of the respondents were teenagers, 49 percent were in their 20s and 34 percent were 30 years old or older. The majority were employed (72 percent), nulliparous (63 percent) and married or cohabiting (63 percent). Fifty-eight percent of the women used the pill, 20 percent relied on a barrier method, 13 percent used the IUD and seven percent reported not having used a method over the preceding month, although half of the last group had had intercourse within that time period. The modal age at first intercourse was 16 years.

Almost one-quarter of the women reported having had five or more sexual partners in their lifetime, one-third reported having had just one partner and the remainder said they had had between two and four partners. However, the overwhelming majority (85 percent) of women had had only one partner in the past year; 10 percent said they had had two partners and four percent reported having had three or more. Teenagers and women over the age of 40 were half as likely as women between the ages of 20 and 39 to report ever having had five or more sexual partners (12–15 percent vs. 26–31 percent).

Women with five or more lifetime partners were twice as likely as women with fewer partners to report having had intercourse five or more times in the previous week (14 percent vs. seven percent); those who reported having had two or more partners in the previous year were twice as likely to have had intercourse almost daily as were women who reported having had only one partner (eight percent vs. 16–18 percent). Teenagers and women in their 20s were slightly more likely than older women to report almost daily intercourse (10–11 percent vs. 4–7 percent).

Fifteen percent of the respondents initiated intercourse before age 16; this percentage ranged from almost one-third of teenagers to 13 percent of 20–29-year-olds, 11 percent of those 30–39 and two percent of those over 40. The percentage of women who had had five or more lifetime sexual partners was about twice as high among women who had initiated intercourse before age 16 as among those whose first intercourse had occurred later (40 percent vs. 20–26 percent). Women who had initiated intercourse before age 16 were also more likely than others to report having had three or more sexual partners within the previous year (10 percent vs. 2–5 percent), and were more likely to have had intercourse almost daily (14 percent vs. 6–9 percent).

Twelve percent of the women reported having terminated a pregnancy and two percent said they had had more than one abortion. The proportion who reported having had an abortion varied by age at first intercourse and by number of sex partners: Eighteen percent of those who had had sex before age 16 reported having terminated a pregnancy, as did 11–13 percent of those who had initiated intercourse in their middle or later teens and seven percent who had postponed first intercourse until age 20 or older; 21 percent of those with five or more lifetime sexual partners said they had had an abortion, compared with 12 percent of those with 2–4 partners and five percent of those with a single partner.

Although there is no evident association between the contraceptive method used currently and a woman's age at first intercourse, total number of sex partners or frequency of sexual intercourse, women using the pill or a barrier method were twice as likely as those using an IUD to report having had more than one partner in the previous 12 months (15 percent vs. eight percent).

The researchers hypothesize that "women with less stable patterns of sexual behavior" might report a higher incidence of pelvic infection. Consequently, they suggest that family planning professionals inquire about their patients' sexual behavior—including their age at first intercourse, frequency of intercourse and number of sexual partners—in order to recommend a method of contraception appropriate to their patients' various needs.

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## No Increase in Risk of PID for IUD Users Who Are Married or Cohabiting with One Sexual Partner

U.S. women who are married or cohabiting and who have only one sexual partner run little increased risk of pelvic inflammatory disease (PID) as a result of IUD use, whereas single women with one partner do experience a significantly increased risk, according to a recent analysis.[1] The investigators propose that the difference in risk may be due to the nature of the women's sexual relationships, rather than to marital status per se. Married or cohabiting women, they suggest, may be more likely than single women to have mutually monogamous relationships with their partners.

The data were collected for the Women's Health Study, a multicenter, hospital-based, case-control investigation of PID conducted between 1976 and 1978. The case group consisted of 657 women aged 18–44 who had a hospital discharge diagnosis of PID; controls were 2,566 women aged 18–44 who had discharge diagnoses of nongynecologic conditions. During their hospital stay the women were interviewed about their reproductive and medical histories, their contraceptive use and their sexual behavior. Excluded from this analysis were women who had been sterilized (or whose partners had been sterilized), those who had a history of PID, those who had not had sexual intercourse for the previous six months, women who had been amenorrheic for the previous 12 months, and those who had had a pregnancy within the previous three months. The birth control method that had been used anytime during the three months preceding the interview was considered the woman's current method; if several methods had been used, assignment of the current method was made using the following system of priority: IUD, the pill, barrier methods and other methods.

To examine the risk of PID associated with IUD use, the investigators used logistic regression models that controlled for a number of variables previously found to be risk factors for PID, such as age, race, education, marital status, history of gonorrheal infection, frequency of intercourse and number of recent sexual partners.

The relative risk of hospitalization for PID among women who had used oral contraceptives or barrier methods during the previous three months was about half that for women who had used no method of birth control (0.4 for oral and 0.6 for barrier); it was less than half for women who had used rhythm (or periodic abstinence) or withdrawal (0.3). In contrast, the risk was around one and a half times higher for women who had used an IUD other than the Dalkon Shield than it was for nonusers of a method. (Because women who had used the Dalkon Shield IUD were so much more likely to be hospitalized for PID—their relative risk was 13.3—they were eliminated from further analysis.)

The relative risk for women who had used the IUD did not consistently change across different categories of gravidity, number of recent sexual partners, frequency of intercourse or history of gonorrhea. Women younger than 25 who had used an IUD had higher relative risks of PID than older women; and never-married IUD users had a much higher relative risk of PID than did women in the other marital-status categories.

Among the unmarried women, regardless of their living arrangement, the controls were much more likely than the cases to report having had only one sexual partner in the six months prior to the study; however, virtually all the married cases and controls reported having only one recent partner. Consequently, to examine the effect of marital status without the potentially confounding effect of the number of sexual partners a woman might have had, the investigators restricted their analysis to women who reported having had only one partner in the previous six months: They found that never-married IUD users had a significant increase in risk (2.6), whereas married or cohabiting IUD users did not (1.2 and 1.0, respectively).

The researchers suggest two hypotheses to explain the differences in the risk estimates by marital status, both of which are based on the assumption that the relationships of women who report a single sexual partner are more likely to be mutually monogamous if they are married or cohabiting than if they do not live with their partner. The first hypothesis suggests that IUDs may promote the ascension of STD-related organisms but not of other PID-causing organisms, usually endogenous flora. (STD organisms are found more often in women whose relationships are not mutually monogamous.[2]) Nevertheless, the researchers caution that laboratory or epidemiologic evidence to support this hypothesis is lacking.

Their second hypothesis is that the risk estimates for previously and never-married women may have been confounded by the sexual activity of a woman's partner. Consequently, they propose that the risk of hospitalization for PID associated with IUD use is more accurately reflected by the risk estimates for married and cohabiting IUD users (which were equivalent to those for women who had used no method).

The study findings also suggest that IUD use, independently of sex-related risk factors, may affect the risk of PID: In the low-risk group of married or cohabiting women with only one recent partner, the relative risk of PID was 1.8 among those who had had an IUD inserted within four months of the interview (although it was 1.0 among those whose insertion had occurred in the more distant past). Nevertheless, the investigators maintain that their analysis indicates that the IUD "remains a useful method of reversible contraception for those women who are otherwise at low risk for pelvic inflammatory disease."

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## C-Section Rates Remain High, But Postcesarean Vaginal Births Are Rising

Almost half a million cesarean births—and, consequently, more than one million days of hospital stay—could have been averted over a five-year period if many women who previously had given birth by cesarean had attempted vaginal delivery, according to a study of the problem of escalating rates of cesareans in this country.[1] Although the proportion of women who gave birth naturally after an earlier cesarean increased in the first half of this decade, in more than 90 percent of instances, medical practice continued to honor the outdated maxim "once a cesarean, always a cesarean." While the strength of this norm appeared to have lessened slightly in 1986, overall cesarean rates continued to climb.[2]

These findings are based on a study of data on 120,000 deliveries in the United States between 1980 and 1985 obtained from the National Hospital Discharge Survey (NHDS). The investigators statistically weighted these data to be nationally representative of rates of primary cesarean delivery, secondary cesarean delivery and vaginal delivery after a previous cesarean section. Data for 1986 statistics were derived from medical abstracts obtained from the 1986 NHDS of 17,990 women discharged after delivery.

Cesarean deliveries steadily increased between 1980 and 1985, from an estimated 596,000 deliveries to 851,000 (or from 17 to 23 percent of total live births); by 1986, this rate had increased to 24 percent. (The rate of initial cesareans increased from 16.3 in 1985 to 17.4 in 1986.) The pool of women giving birth who had a previous cesarean section increased between 1980 and 1985 from 5.1 percent to 8.4 percent. The incidence of repeat cesareans is considered to have been the major contributor to the overall increase in cesarean births in the first half of the decade: The proportion of all cesarean deliveries that were repeat procedures increased from 30 percent in 1980 to 35 percent in 1985 and accounted for 48 percent of the rise in total cesarean deliveries; in 1986, repeat cesareans again accounted for 35 percent of the total. On the basis of clinical studies, the researchers estimate that between two in five and four in five women could successfully avoid a repeat cesarean section, yet the rate of vaginal deliveries after cesarean per 100 deliveries following a cesarean is very low. Although the annual rate increased from 3.4 to 6.6 per 100 between 1980 and 1985, and increased again in 1986 to 8.5, the total rate for the entire 1980–1985 period was only 4.9 per 100.

Between 1980 and 1985, there was little variation in rates of vaginal delivery following cesarean by age, race, marital status, hospital size or type of hospital. However, differentials by region and method of payment were noted. For example, women in the West had the highest rate of vaginal deliveries after cesarean (7.9 per 100 deliveries following a cesarean), followed by the Northeast (4.8), the Midwest (4.3) and the South (3.8). In addition, women covered by Blue Cross had the lowest rate of vaginal delivery after cesarean (4.3 per 100), whereas women who paid for hospital fees themselves and did not use private or other health insurance had the highest rate (6.9). Furthermore, the source of payment was closely associated with overall rates of cesareans: In 1986, women who paid for delivery themselves had the lowest rate of cesarean sections (19 percent), and women who were covered by Blue Cross had the highest rates (27 percent), rankings essentially unchanged from those in 1980.

Among women who delivered vaginally between 1980 and 1985, those who had not had a prior cesarean were hospitalized an average of three days; those who had had a prior cesarean stayed 3.2 days. However, the average hospital stay for those with initial cesarean deliveries was six days and for women with repeat cesareans was 5.6 days. Fewer than one-quarter of the women who gave birth vaginally (whether or not they had had a previous cesarean birth) stayed in the hospital for 4–5 days, compared with almost half of the women who had repeat or primary cesareans. By 1986, however, the mean length of stay had diminished for all types of deliveries: The average stay was 2.6 days for mothers having a vaginal birth, 2.7 days for those delivering vaginally after a cesarean, 5.2 days for women having an initial cesarean and 4.7 days for those having a repeat cesarean. Among women who delivered vaginally, 49 percent of those who had a prior cesarean delivery were free of pregnancy or delivery complications, as were 54 percent of those who had never had a cesarean section.

Nearly three-quarters of the 1.4 million women who had repeat cesareans between 1980 and 1985 experienced no complications of pregnancy or delivery that might have provoked the cesarean delivery. The researchers hypothesize, thus, that more than one million of these women could have attempted a vaginal delivery. Based on clinical studies of the success rate of vaginal deliveries after cesarean sections, the investigators estimate that the practice of letting women attempt vaginal delivery might have prevented 500,000 cesareans during the early 1980s.

The researchers assert that the decision not to attempt natural delivery among women with previous cesarean sections "is more influenced by traditional medical practice than [by] an evaluation of the mother's current medical situation"; they also surmise that many U.S. hospitals and physicians may believe that they cannot meet the guidelines for allowing a trial of natural delivery set by the American College of Obstetrics and Gynecology. Furthermore, the researchers suggest that women who have had a prior cesarean section may be reluctant to attempt a normal delivery. However, they maintain that as long as the proportion of women who have a vaginal delivery after cesarean is relatively low, the total number of cesarean deliveries will tend to remain high. In fact, if age-specific cesarean rates continue to climb at the pace found between 1970 and 1984, the investigators contend that the U.S. cesarean rate "could reach 28.8 cesareans per 100 deliveries in the year 1990, and 40.3 by the year 2000."

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2. P. J. Placek, S. M. Taffel and M. Moien, "1986 C-Sections Rise; VBACs Inch Upward," *American Journal of Public Health*, **78**:562, 1988.

## Half of All U.S. Women With Newborns Are In the Labor Force

Overall U.S. fertility rates have changed little during the 1980s, with racial and socioeconomic differentials remaining substantial. The most recent data from the Bureau of the Census indicate that in 1987, black women were more likely than white women to have had a child and to have done so out of wedlock. However, certain changes in childbearing continue: For example, an ever-increasing percentage of new mothers are joining (or rejoining) the labor force soon after having their baby, and childbearing is becoming increasingly more common among women in their 30s.

In the year ending June 1987, 3.7 million American women aged 18–44 gave birth. The overall fertility rate of 71 births per 1,000 women was similar to that in 1980, but was substantially higher than the rate of 66 births per 1,000 women registered in 1984, which marked the lowest level so far this decade. In 1987, there were 114 births per 1,000 women aged 25–29, compared with 96 per 1,000 women aged 18–24, 74 per 1,000 women aged 30–34 and 36 per 1,000 women aged 35–39.

Between 1976 and 1987, fertility rates among women in their 30s increased significantly: By 1987, births to women aged 30–34 and 35–39 accounted for 21 percent and nine percent of all births, respectively, up from 14 percent and five percent in 1976. The proportion of childless women aged 18–44 remained stable at 37 percent between 1980 and 1987, but was two percentage points higher than that in 1976. In 1987, 24 percent of 30–34-year-olds, 17 percent of 35–39-year-olds and 14 percent of 40–44-year-olds were childless; these proportions were about one and a half times higher than those among comparable women in 1976.

Less-educated women were more likely than better-educated women to give birth. In 1987, there were 93 births per 1,000 women who had not graduated from high school, compared with 72 per 1,000 women who had completed high school and 64 per 1,000 women with four or more years of college. Fertility rates also tended to decrease as family income increased: For example, women whose family incomes were below $10,000 were much more likely than those whose incomes were $35,000 or more to give birth (95 per 1,000 vs. 55 per 1,000). The rate among women who were not in the labor force was more than two and a half times higher than that among women who were (128 per 1,000 vs. 50 per 1,000).

Hispanic women had children at a significantly higher rate than did non-Hispanics (96 per 1,000 vs. 69 per 1,000). Although Hispanic women constitute only eight percent of all American women aged 18–44, they accounted for 11 percent of all births in 1987. Black women had a considerably higher fertility rate than did white women (83 per 1,000 vs. 69 per 1,000). The large racial differential was primarily due to the much higher fertility rate among black 18–24-year-olds (143 per 1,000, compared with 87 per 1,000 among whites). The rate among black women aged 25–29 was lower than that among comparable whites, on the other hand, and there was no racial differential in rates among women over the age of 30. White women were significantly more likely than black women to have a *first* birth after the age of 30, however.

Overall, 19 percent of all births in 1987 were to unmarried women, and 62 percent of such births occurred among women under the age of 25. More than half (55 percent) of all births to black women occurred out of wedlock, compared with 12 percent of all births to whites and 26 percent of all births to Hispanics.

The proportion of recent mothers who are in the labor force continues to grow: In 1987, 51 percent of American women with newborns were either working or seeking employment, compared with 31 percent of such women in 1976. Although black women with infants were much more likely than comparable white women to be in the labor force in 1976 (43 percent vs. 29 percent), by 1987 the racial differential in labor-force participation had virtually disappeared, with 53 percent of blacks and 51 percent of whites with newborns working that year. Overall, women who had attended college for four or more years, who were having their first birth, or who were over the age of 30 were more likely than others to be in the labor force in 1987.

Although the media have focused a great deal of attention on the rise in dual-income couples with no children, the data show that such families accounted for just 14 percent of all married-couple families in 1987, an increase of only two percentage points since 1976. On the other hand, dual-income couples with children now account for 46 percent of all such families, a rise of 13 percentage points since 1976. During the same period, the proportion of "traditional" families—that is, families in which the husband works and the wife stays home with the children—decreased from 43 percent to 28 percent of all married-couple families.

**Reference**

**1.** U.S. Bureau of the Census, "Fertility of American Women: June 1987," *Current Population Reports*, Series P-20, No. 427, 1988.

## No Added Risk of Stroke Or Heart Attack Is Found Among Former Pill Users

Former users of oral contraceptives run no increased risk of suffering a heart attack, a stroke or other cardiovascular disease, or of dying from any of these, even if they used the pill for many years. Women who recently stopped using the pill are also at no excess risk. However, current pill users who smoke do have a significantly elevated risk of major coronary heart disease. These findings were reported recently from an eight-year prospective study involving more than 100,000 American women.[1]

In 1976, a total of 121,700 female registered nurses aged 30–55 years participated in the initial round of the prospective Nurses' Health Study and reported, among other things, a complete history of coronary heart disease and pill use. (The majority of pill users began use at a time when high-dose pills were not uncommon.) The investigators excluded women who gave no information on pill use or who reported a history of angina pectoris, myocardial infarction or stroke, leaving 119,061 women (98 percent of the original sample) available for this study.

Over the next eight years, the women completed biennial follow-up questionnaires regarding their pill use and history of heart attack and stroke. Their involvement in this analysis ended if they reported an occurrence of nonfatal myocardial infarction or a nonfatal stroke during the course of the eight years or if their death was reported before June 1, 1984. The investigators reviewed medical and hospital records and death certificates to confirm reports of nonfatal or fatal coronary heart disease and nonfatal or fatal stroke (excluding subdural hematomas and strokes caused by infection or neoplasia), in accordance with criteria established by the World Health Organization and the National Survey of Stroke. The investigators estimate that they confirmed 92 percent of the nonfatal events (by questionnaire and telephone interview) and 98 percent of the deaths (by review of death certificates and the National Death Index).

Current pill users were 2.5 times as likely as nonusers to experience cardiovascular disease or death, although the researchers determined that "the excess risk was concentrated among cigarette smokers." There was no overall increase in risk among past pill users after adjusting for the effects of age and risk factors for cardiovascular disease, such as hypertension and diabetes. Regardless of how long ago a woman had discontinued using the pill (ranging between one month and greater than 15 years), past users were at no increased risk of cardiovascular disease. The risk of stroke among women who had used the pill for longer than five years appeared elevated, but the researchers determined that the increase was not statistically significant.

The investigators maintain that current pill use increases the overall risk of cardiovascular disease, but this is true mainly for women who smoke. They add that oral contraceptives seem to primarily alter acute processes that affect the risk of heart disease, such as platelet function and coagulation; once a woman stops taking the pills, the acute processes return to levels found before pill use and the risk of cardiovascular disease probably reverts to that of a woman who has never used the pill. Furthermore, they state that their results "generally fail to show an increased risk even among recent past users of oral contraceptives." The investigators conclude that their findings "provide generally reassuring evidence that the risks of cardiovascular diseases faced by past users of oral contraceptives appear to be similar to those for women who have never used such agents." Given that the women in the sample were likely to have taken high-dose pills, the researchers also suggest that the study results "lend further support to findings of a lack of effect of past use of low-dose formulations [on cardiovascular disease risk]."

**Reference**

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"Fetal Research Under Fire . . ."

*(Continued from page 11)*

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**24.** R. Windom, Assistant Secretary for Health, "Fetal Tissues in Research," memorandum to J. Wyngaarden, director, NIH, Mar. 22, 1988.

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**36.** HFTTRP, answer to question 2.

**37.** Ibid., answer to question 6.

**38.** Ibid., answer to question 3.

**39.** Ibid., answer to question 2.

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**41.** Ibid., answer to question 7.

**42.** Ibid., answer to question 1.

**43.** Ibid., answer to question 5.

**44.** K. James, testimony before NIH Panel, Transcript, pp. 514–515.

**45.** J. Bopp and J. Burtchaell, "Statement of Dissent," p. 25.

# Books in Review

## Strategies Past and Future

**Abortion, Politics, and the Courts: *Roe v. Wade* and Its Aftermath**
*by Eva R. Rubin, revised ed., Greenwood Press, Westport, Conn., 1987, $35.00, 264 pp.*

**Abortion and the Constitution: Reversing *Roe v. Wade* Through The Courts**
*ed. by Dennis J. Horan, Edward R. Grant and Paige C. Cunningham, Georgetown University Press, Washington, D.C., 1987, $22.95, 390 pp.*

*Reviewed by Eve W. Paul*

The election in 1988 of another antiabortion president and the appointment of a new justice to a Supreme Court that was closely divided on the abortion issue mark a possible turning point for abortion rights in the United States. The two books reviewed here are of enormous value in illuminating the dynamics of the abortion controversy and helping the prochoice community prepare for the battle that it surely faces.

Eva Rubin's *Abortion, Politics, and the Courts:* Roe v. Wade *and Its Aftermath*, first published in 1982 and updated in a revised 1987 edition, is probably the best history available on the abortion controversy in the United States. The author, associate professor of political science at North Carolina State University, has given us a lively, spirited and thoroughly researched account. After a brief overview of the attempt in the 19th century to control abortion by law and of the abortion reform movement of the 1950s and 1960s, Rubin launches into the heart of her material—*Roe* v. *Wade* and its aftermath. She traces the politicization of abortion, the attempts to defeat prochoice congressmen and state legislators, the introduction of state legislation to limit abortion within the confines of *Roe* v. *Wade* and the campaign to pass a constitutional amendment that would overturn it.

Rubin addresses litigation as the key to establishing abortion rights. She summarizes the history of privacy rights decisions by the courts, which go back to Justice Louis Brandeis's classic dissent in 1928 in *Olmstead* v. *United States*; there, he referred to "the right to be let alone" as "the right most valued by civilized men." A shift in emphasis from physical intrusions upon person and property to more subtle invasions of psychological privacy and personal decision-making appeared in the dissents written by Justices William O. Douglas and John Harlan in *Poe* v. *Ullman*, an unsuccessful 1961 challenge brought (with the support of the Planned Parenthood Federation of America and the American Civil Liberties Union) against a Connecticut statute that prohibited the use of contraceptives. Four years later, in its decision in *Griswold* v. *Connecticut*, the Supreme Court overturned that Connecticut statute and gave constitutional grounding to a right to marital privacy. In 1967, the California Supreme Court, overturning the conviction of Dr. Leon Belous for referring a girl to a Los Angeles physician for an abortion, articulated a broadened right to privacy in matters relating to marriage, family and sex. By 1970, legal actions challenging restrictive abortion statutes were pending in 13 states. (Liberalized abortion statutes had been enacted by some 12 states between 1967 and 1970; they had had little impact on access to abortion, however, mainly because only a few women, mostly those well educated and middle-class, were able to obtain abortions on the permitted grounds, usually pertaining to threat to life or health, or to rape or incest.)

Rubin gives us an excellent discussion of the legal issues and procedural aspects of *Roe* v. *Wade*, a case that she analogizes to *Brown* v. *Board of Education*. Both cases, she writes, "pitted the forces of tradition and the forces of change against each other in a subject-matter area where social mores were in transition and public values were changing" [p. 87]. She stresses the Supreme Court majority's emphasis on medical factors and its choice of constitutional rather than philosophical principles on which to base the decision. Sarah Weddington, who argued the plaintiff's case, is quoted as saying that it was Justice Harry Blackmun, author of the majority opinion, who formulated the trimester approach and provided the key concept of viability, which won the support of enough justices to produce a political compromise that upheld abortion rights.

Rubin finds the Court decision to have been in harmony with worldwide efforts to control population growth and improve the status of women. She maintains that "a decision [by the *Roe* Court] to defer to state legislatures would have allowed at least some states to move counter to these trends" [p. 86]. With no threat of having their abortion laws declared unconstitutional, state legislatures would have been under "enormous" pressure to reimpose controls on abortion. Similar pressures prevail today, and Surgeon General C. Everett Koop has warned that if *Roe* is overturned, we will merely replace one problem with 50.[*] Rubin states that the Court was "clearly not indifferent to the underlying policy considerations" [p. 59].

Although the public at large, including a majority of Catholic voters, supports the *Roe* decision, antiabortion groups have been able to make a difference in close elections. By 1980, these groups had joined a "spectrum of conservative, extremist, and single-issue forces to form a solid bloc behind the candidacy of Ronald Reagan" [p. 112]. The antiabortionists were sufficiently influential at the Republican convention to force planks in the platform against the equal rights amendment and abortion, and to get the nominee to pledge to appoint judges who "respect the sanctity of human life." But despite Reagan's victory at the polls, the New Right did not have the votes in Congress to enact a conservative social agenda, although it succeeded in attaching riders to specific funding programs. As a result of these efforts, since June of 1981 abortions have been covered by Medicaid only in instances where the woman's life would be endangered if she carried the pregnancy to term. The Pregnancy Disability Act of 1978 (which amended the Civil Rights Act to forbid discrimination in employment and employee benefits for pregnant women) underwent amendment that exempts employers from including elective abortions in medical disability plans. Government-funded health insurance plans for federal workers were barred from paying for abortions. Additionally, programs tailored to conservative ideas that offered alternatives to abortion were enacted, such as the 1981 Adolescent Family Life Act, which funded pregnancy prevention programs to encourage chastity and adoption.

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[*] "Koop Foresees 50 Different Laws if Abortion Ruling Is Overturned," *New York Times*, Jan. 20, 1989, p. A21.

In an afterword written for the revised edition, Rubin speculates that "it is still possible that the Supreme Court, with newly appointed conservative Justices, could reverse the decision or that a constitutional amendment would return the problem to the states" [p. 191]. It is this possibility that has motivated the editors of and contributors to *Abortion and the Constitution: Reversing* Roe v. Wade *Through the Courts*. Based on papers originally presented at a 1984 conference sponsored by Americans United for Life, this book is written for lawyers, legislators and other antiabortion strategists who hope to return America to the pre-*Roe* days, when states were free to restrict or outlaw abortion. The contributors are mostly law professors with impressive credentials. They have studied in depth many aspects of the abortion controversy, laying the groundwork for a massive legal assault on *Roe*. Several essays are devoted to historical evaluations of *Roe* and abortion. But the purpose of *Abortion and the Constitution* is not academic inquiry; the book is designed as a blueprint for action and has been used that way, as has become clear since its publication.

An opening essay, "Abandoning Error," by Michael Pearce Pfeifer, one of the few nonlawyer contributors, traces the Supreme Court's history of "self-correction." Pfeifer points out that the Court has explicitly rejected its earlier reading of the Constitution over 100 times, and quotes Harvard law professor Laurence Tribe as saying, "It is sometimes more important that the court be right than that it be consistent" [p. 11]. Pfeifer describes the 1905 *Lochner* v. *New York* ruling by a divided Court (a ruling much criticized as "substantive due process"), which held that the liberty conferred by the Fourteenth Amendment had been violated by the states' regulation of working conditions, hours and wages. He sees *Roe* v. *Wade* as a parallel decision, which uses the rubric of liberty to deny the power of a state to regulate abortion. The Court overturned the *Lochner* ruling in 1937, in part because the Roosevelt-appointed justices were eager to sustain New Deal social legislation. However, the Court has never taken away a fundamental right once such a right has been found in the Constitution.

Richard S. Myers, professor of constitutional law at Case Western Reserve University, is not satisfied with the states' rights approach for reversing *Roe*. Myers suggests instead that without squarely confronting *Roe*'s holding, opponents attack its trimester framework and reliance on the concept of viability, basing their arguments on new scientific data about fetal life. He asserts, "Absolute security for the unborn requires that the Court eventually hold that the Constitution protects the inviolability of all human life" [p. 45]. Such an attack should proceed incrementally, he counsels, similarly to the way in which NAACP lawyers secured the overruling of *Plessy* v. *Ferguson*, which had sanctioned separate but equal education for blacks and whites: In a series of lawsuits, Thurgood Marshall, then counsel for the NAACP, sought "absolute and complete equalization . . . in white and black schools on the theory that the extreme cost of maintaining two equal school systems would eventually destroy segregation" [p. 25]. After a number of victories, he moved to his ultimate, and successful, argument that separate could never be equal.

Likewise, Victor Rosenblum and Thomas Marzen, both well known to readers in this field, propose that the most logical and potentially workable strategy for reversal of *Roe* is to launch an attack on the key concept of viability. They would seek to narrow the legal definition of maternal health and "focus on expanding the state's compelling interest in fetal life to encompass the woman's entire pregnancy" [p. 197]. Pointing out that Justices Sandra Day O'Connor and Byron White and Chief Justice William Rehnquist believe that the state has such an interest, Rosenblum and Marzen maintain that "emphasis on the biologically human character of the fetus is essential to undercutting the social and legal claims justifying recognition of the abortion privacy right" [p. 198]. Going beyond a purely legalistic approach, they concede that because of the *Roe* Court's predominant concern with social, psychological and economic detriments and stigmas of pregnancy, "a fully convincing case for abolition of the *Roe* doctrine can be made only in the context of a social and legal milieu in which these stigmas and detriments are alleviated or erased" [p. 205]. Recognizing that charitable assistance to women through alternative agencies is not enough, they urge antiabortionists to ally themselves with feminists and progressive causes in order to institutionalize alternative assistance to women, during pregnancy and afterward, as a matter of legal right. Regrettably, this advice has been ignored, which calls into serious question the true motivation of the "pro-life" movement.

Former Senator John East of North Carolina, with his former chief of staff, Steven Valentine, contributes a novel argument for overruling *Roe* that rests on the definition of "person" as used in the Fourteenth Amendment. The Supreme Court has decided the meaning of that word only twice: In 1886, the *Santa Clara County* v. *Southern Pacific Railroad* decision held that the corporation is a person; in *Roe*, the Court ruled that "the word 'person,' as used in the Fourteenth Amendment, does not include the unborn" [p. 89]. The Court in *Santa Clara* gave no rationale for holding the corporation to be a person, yet this ruling has had enormous consequences, enabling corporations to challenge the constitutionality of any government action that adversely affects their interests. East maintains that all the arguments used in *Roe* to show that a fetus is not a person (e.g., it is not counted in the census; it cannot be a representative, a senator or a presidential elector) would be equally effective for showing that a corporation is not a person within the Fourteenth Amendment, and that if a fetus is not a person, then neither should a corporation be considered as such. Given that it is unrealistic to seek a reversal of *Santa Clara*, East contends that if the constitutional usage of "person" is flexible enough to include a corporation, it cannot reasonably be too inflexible to include the unborn. (It is of interest that the Supreme Court now has before it the issue of whether undocumented aliens are "persons" for purposes of the census and reapportionment.)

Lynn Wardle, a law professor at Brigham Young University, contributes an essay on judicial appointments to the lower federal courts. He points out that the selection of judges to fill vacancies on the federal district courts and courts of appeal, while sometimes deemed less important than appointments to the Supreme Court, actually has a profound influence on the development and application of judicial doctrine. Wardle urges antiabortionists to mount an organized effort to monitor judicial appointment opportunities and seek the designation of antiabortion judges—a message that has clearly been heeded. The Reagan administration, applying a "litmus test" of opposition to abortion, named 379 judges—half the federal judiciary—and it is expected that President Bush will make another 200 appointments over the next four years. While it is not clear if Bush's appointees will be as carefully screened on ideological grounds, the outlook for pro-choice litigators is not promising.

A concluding essay by Edward Grant, executive director and general counsel of the Americans United for Life Legal De-

*(Continued on page 43)*

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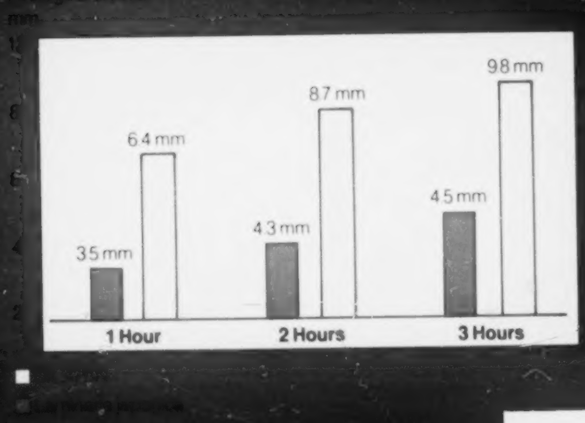

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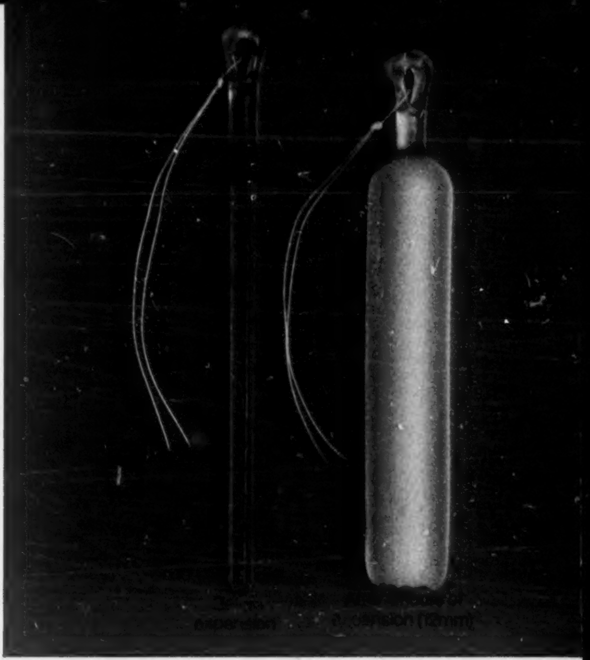

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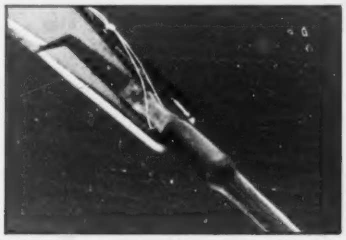

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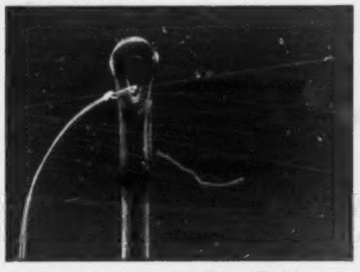
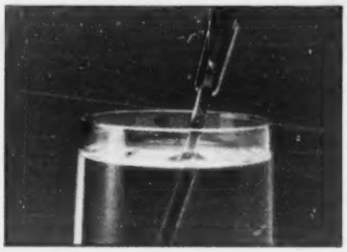
Open package using sterile technique. With forceps, firmly grasp looped handle and remove device from package.





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*(Continued from page 40)*

fense Fund, examines the impact of the Supreme Court's 1986 decision in *Thornburgh* v. *American College of Obstetricians and Gynecologists* on the strategy to reverse *Roe* v. *Wade*. Grant devotes much attention to the fact that in *Thornburgh*, Justice Lewis Powell joined the "entrenched foes of abortion restrictions—Blackmun, Marshall, Brennan and Stevens" [p. 247] to invalidate a Pennsylvania law regulating abortion. The resignation of Justice Powell since the publication of this book, as well as his replacement by Anthony Kennedy, does not augur well for the future of *Roe* v. *Wade*. It is time for prochoice forces to develop and implement their own strategy to preserve *Roe*, and to mobilize massive public support for *Roe* and the enormous health benefits it has brought American women and children.

## Delving Beneath the Surface

### Women, Society, the State and Abortion: A Structuralist Analysis

*by Patrick J. Sheeran, Praeger, New York, 1987, $32.95, 161 pp.*

*Reviewed by Carole Joffe*

Patrick Sheeran brings an unusual and promising set of credentials to the study of the abortion conflict: He is a former Catholic priest who served at the parish level and as secretary of the Diocesan Matrimonial Court in Texas for a number of years; he also earned several graduate degrees, including a doctorate in public administration, and became executive director of a Planned Parenthood affiliate in California later in his career. Currently, he works for the U.S. Public Health Service and is also adjunct professor of public administration at the University of Southern California. Thus, he has had extensive personal involvement in what are arguably the key institutions struggling over the abortion issue: the church, the family planning establishment, the federal government and academia. Although Sheeran does not specifically say so, the reader can assume that his varied background is precisely what led him to focus on the questions that guide this book, namely, "Why do advocates on both sides of the controversy believe so strongly that they are right? Why do so many genuinely good and sincere people on both sides disagree so vehemently on this issue?" [p. 91].

Sheeran's strategy for answering these questions was to interview 12 leading figures in the abortion controversy—half of them prochoice advocates and the other half antiabortion representatives—and to subject the interviews to structuralist analysis. Structuralism, most often associated with Jean Piaget and Claude Levi-Strauss, is both a theory and a method of analysis. As a theory, it maintains that there is a disconnectedness between the appearance and the essence of a thing, that the nature of a thing is hidden on the surface and must be explained by what lies beneath the surface. As a method, structuralism seeks to unveil the deep, hidden structures of a phenomenon in order to gain a fuller understanding of it. Although Sheeran attempts valiantly to summarize structuralism's key points for the uninitiated reader, he cannot offer an adequate course in this approach within one book chapter. However, his main argument about structuralism and its role in his study is certainly accessible to all: "[It] offers both the promise and flexibility to uncover at least some of the hidden characteristics that are assumed to exist beneath the surface of the current abortion debate" [p. 95].

In spite of Sheeran's unusual qualifications for undertaking this project, and the obvious good intentions that guided his work, he nonetheless disappoints the reader in several respects. First, his ultimate conclusions about the abortion conflict—at least those regarding the opponents of abortion—are convincing enough, but will not be anything new to readers familiar with the abortion literature of the last few years. When Sheeran argues that "deeply rooted beneath the surface in the prolife ideology is a conservative, traditional notion of the role of the family and of women in society" [p. 125], and an "admiration of the traditional woman and the glories of motherhood" [p. 127], he appears to simply restate arguments made by Kristin Luker in her widely noted book *Abortion and the Politics of Motherhood* (University of California Press, 1984). Similarly, when he argues that opposition to abortion, rather than being the main issue on the prolife agenda any more, "is one means of fighting the antifamily and antitraditional image that abortion is seen to promote" [pp. 127–128], he simply recapitulates a major point made by Rosalind Petchesky in her well-received book *Abortion and Woman's Choice* (Longman, 1984). Where the analysis may prove useful, however, is in helping secular readers to penetrate past and current theological arguments relating to abortion.

Sheeran's discussion of prochoice activists engages him much less than does his analysis of abortion opponents. Moreover, the conclusions he draws about prochoice activists, while less repetitive of what has already been written, are also less convincing. Although he quite clearly sympathizes with the prochoice movement earlier in the book, he concludes that prochoice advocates particularly hate men and also feel an animosity toward some women. Speaking of the prochoice leaders he interviewed, Sheeran maintains that "beneath the surface there is a hatred for the society, for men in particular, and for the traditional woman, because the society dominated by males and supported by traditional women has contributed to the slavery of women" [p. 128]. He also notes, "The prolife charge that prochoice advocates hate women more than men hate women may be partially true" [p. 129]. To be sure, this is not all that Sheeran says about prochoice activists; he also mentions their commitment to bringing about a society in which women are equal to men. However, the author, intentionally or not, has fallen into the trap of equating the prochoice activist with the caricature of the man-hating (and woman-hating) feminist by dwelling on the alleged animosities held by the prochoice respondents and saying little else about these people.

The book's greatest disappointment is the opportunity that it apparently missed. In spite of the wealth of writing on abortion over the last few years, no one else has analyzed (at least in book form) the content of interviews with national leaders from both sides of the conflict. Given that Sheeran conducted probing interviews with people of such eminence as C. Everett Koop, Jo Ann Gasper and John Willke on the antiabortion side, and Louis Hellman, Kate Michelman and Jeannie Rosoff on the prochoice side, it is especially frustrating to see how little use he has made of their answers to his questions. Sheeran summarizes the interviews in a brief chapter of 20 pages, but includes remarkably few quotes. On occasion, interviewees' comments that beg for amplification are simply dropped into the text, leaving a curious if not baffled reader. For example, he states that "Jeannie Rosoff, on the prochoice side, was willing to concede that

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the prolife argument that life begins at conception is valid and has been adequately established" [p. 106]. I assume that the speaker, president of The Alan Guttmacher Institute, made her remarks within a larger context; the failure to make that context clear does a disservice to both Ms. Rosoff and the reader.

Although the main conclusions Sheeran reaches resemble those of other writers, the interviews he conducted clearly presented him with a unique opportunity to explore in depth the internal conflicts of each movement and to compare the constraints facing both prochoice and antiabortion leaders. For example, the interviews indicate that opinions about family planning services differ within the antiabortion group and that some leaders in the movement feel concern about opportunists within their ranks for whom the "unborn child is now less important than the political debate itself" [p. 117]. Sheeran suggests similarly that within the prochoice group, there are intriguing differences of opinion about the morality of abortion and the compromises that at least some members of the group might be willing to strike with antiabortion forces, such as withdrawing support for second-trimester abortions. Although these internal conflicts grab fewer headlines than the overt fight between antiabortion groups and the prochoice movement, how the conflicts are resolved will doubtless have enormous consequences for the fate of abortion policy in this country. It is a pity that Sheeran did not enlighten us more on this aspect of the abortion debate.

## An Entrenched Underclass

**The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy**
*by William Julius Wilson, University of Chicago Press, Chicago, 1987, $19.95, 265 pp.*

*Reviewed by Dennis P. Hogan*

*The Truly Disadvantaged* examines black urban poverty in the United States, its consequence for continued racial inequality and what should be the appropriate public policy responses to the problem. Its greatest strength is its conscious attempt to link social analysis and public policy analysis to explain the emergence of a black urban underclass and to make recommendations for a liberal policy agenda. William Julius Wilson, professor of sociology and public policy at the University of Chicago, presents a complex, multifaceted analysis of the black urban underclass. He impressively marshals ideas and evidence across disciplines and subject areas and presents them in a manner that is accessible to the college-educated reader, thus making *The Truly Disadvantaged* as suitable for classroom use or casual reading by the informed citizen as for scientific study.

Wilson traces the roots of poverty among urban blacks to the historical patterns of race relations; he examines both the past migration of blacks from the rural South to cities and recent changes in urban economic opportunities and the residential patterns of blacks. He argues that during the past two decades, minority urban residents have witnessed the erosion of the industrial bases, an erosion that has led to the disappearance of the industrial-sector jobs that had been the mainstay of black male employment. Many less-educated blacks now find that their employment prospects are limited and that they face a lifetime of marginal employment or joblessness. This lack of jobs has severely damaged the ability of black men to provide for their families and to maintain traditional male roles. As a consequence, black men have become alienated from the family and other social institutions. They are more likely to commit or to be victims of crimes and to engage in various street hustles as a way of making money. After 1970, the number of employed black men per 100 black women of the same age (the Male Marriageable Pool Index) declined precipitously, reducing the number of "desirable" same-race marriage partners available to black women. Wilson believes that this deterioration in the marriage market is a fundamental cause of unwed motherhood among blacks, and accounts for the increased percentage of black families that are female headed.

These changes in the economic situation and family composition of poor blacks, however, have coincided with improved economic opportunities for well-educated blacks. The partial desegregation of suburban housing markets has enabled working-class and middle-class blacks to move from central city ghettos, leaving behind the poorest families, which are disproportionately headed by women. Wilson suggests that this increased economic segregation of the ghetto has weakened the basic community organizations—the schools, the churches and other social groups—that formerly acted as "social buffers" against sustained joblessness and poverty. Daily interaction within the ghetto among employed people, families dependent on earned incomes and other community members has ended, further isolating the ghetto residents from mainstream life. In addition, outsiders have continued to avoid these communities. This isolation and social-structural reality has created a milieu of poverty within the ghetto that is reinforced by the prevailing family composition, the deterioration of the schools and very limited economic opportunities, and accounts more for the existence of an underclass, Wilson posits, than does a culture of poverty per se.

A more conventional social scientist would simply recommend that programs be targeted at the problems of the underclass communities. Indeed, Wilson does argue that the "programs created to alleviate poverty, joblessness and related forms of social dislocation should place primary focus on changing the social and economic situations, not the cultural traits, of the ghetto underclass" [p. 138]. But Wilson does not rest his case. Through his sociological and demographic study, coupled with a public policy analysis of social welfare programs, he argues that the public policies targeted at, in particular, specific racial or economic groups—as were many of the Great Society programs—have not been politically viable over the long term. According to his analysis, universalistic programs designed to assist the entire populace, such as those formulated as part of the New Deal, can more readily be adopted and sustained.

Thus, Wilson suggests that "the hidden agenda for liberal policymakers [should be] to enhance the chances in life for the ghetto underclass by emphasizing programs to which the more advantaged groups of all class and racial backgrounds can positively relate" [p. 163]. These include economic policies that improve the competitiveness of American products and generate economic growth and a tight labor market, a national labor policy that upgrades the human capital skills of workers so that they can meet the needs of a changing economy, and programs that establish basic support for family well-being, such as child-support assurance, family allowances and child care.

Wilson has written an intellectually

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powerful and politically potent book. His analysis and recognition of the sociological distinctiveness of the underclass is of fundamental importance for understanding the social and economic roots of adolescent fertility, single parenthood and unwanted fertility among poor blacks. Yet the intellectual brilliance of *The Truly Disadvantaged* is marred by numerous stylistic, substantive and organizational flaws. The book is not crisply written but is repetitive and wordy. The statistical evidence presented is sometimes confused (for example, his opaque description of the Ellwood and Bane critique of research on the persistence of poverty that was based on the Panel Study of Income Dynamics) or unduly simple (such as the rank-order associations of the Male Marriageable Pool Index and the measures of family structure for whites and blacks in four regions of the nation).

In addition, Wilson divided the book into distinct parts that segment his ideas and detract from the coherence of his major arguments. Most notable is the lack of a discussion linking his ideas about social isolation with his analysis of joblessness and marriage markets. In Chapters 3 and 4, Wilson analyzes data to characterize national and regional marriage markets and patterns of family structure, and he argues in Chapter 2 that the critical feature of underclass life is its social isolation. If such isolation exists, then it must have an effect on the likelihood of marriage. (For example, a single underclass black woman has fewer opportunities than a black woman who lives outside the ghetto to meet an employed, and—by definition—marriageable, black man.) Yet he seems to miss the connection between social isolation and marriage markets in his analysis.

It is not apparent how the public policies Wilson advocates in his final chapter will redress the social isolation of poor communities. The family support and child-care policies Wilson recommends will undoubtedly benefit underclass women and children, but these policies are likely to make it even easier to be a single mother, further diminishing the advantages of marriage and exacerbating the separation of black men from family life. And it is possible that his proposals would reduce the number of people in socially isolated underclass communities (and thus increase the proportion of working-class and middle-class blacks) without actually changing the character of underclass communities or improving the lot of the people who remain there. Many of these communities originated in the public housing projects of past decades, and what may be necessary for the economic integration of black communities, as well as improved racial integration, is for the government to provide scattered-site low-income housing. Yet the abandonment and demolition of the old ghetto communities is an unlikely outcome of this process. It is not even clear that the underclass communities will support the policies Wilson advocates, even if the general population does.

It is already apparent that this book is destined to be more widely cited and selectively quoted than it is to be read. This impression was reinforced at the 1988 Population Association of America meeting, where Wilson's book was a common topic of discussion in both formal sessions and informal conversations. I heard *The Truly Disadvantaged* characterized as advancing the theory of a culture of poverty. Another person attacked the simple marriage-market postulate in the book, ignoring the crux of Wilson's argument—the need for black men to be employed. Yet another argued that it is the economic restructuring in selected cities that creates the underclass, overlooking the key element in Wilson's thesis—that there is a link between the restructuring of the economy and the disappearance of jobs for poorly educated workers.

In part, I suspect problems of interpretation of the book arise from the difficulty of operationally defining and scientifically testing an argument as complex as that advanced by Wilson, a thesis that involves individual as well as group behavior, in both community and societal contexts. Wilson's hypotheses are far richer than the usual demographic hypotheses; conventional demographic data and methods of analysis will not suffice in testing them. For example, nationally representative demographic surveys ordinarily provide little community data for measuring the effects of social isolation on behavior. Yet the usual demographic practice of using central city areas as proxies for the effects of social isolation simply will not suffice in the absence of such data. The high rates of nonresponse to surveys in underclass communities is a seldom discussed but very real problem.

In addition, conceptual definitions of common demographic issues also present problems. Marriage-market studies have rarely used employment information and have almost never considered local markets (communities) sufficiently so as to serve as adequate tests of Wilson's marriage-market thesis. In fact, the importance of underemployment and its consequences for occupational and family careers has only recently begun to be subjected to serious investigation. Furthermore, studies of fertility and family formation have primarily focused on women. Demographic models of reproduction and family formation rarely consider the roles of fathers, husbands or male sexual partners. Demography currently lacks the necessary conceptual models and data sources to adequately analyze relationships between people throughout the courses of their lives.

*The Truly Disadvantaged* thus presents demographers with a difficult choice. We can either continue to dismiss the book for its overly simplistic analyses, or we can grapple with Wilson's ideas and formulate better analyses of the connections that exist between family formation and social and economic life in American communities. The latter strategy would accept the ideas presented by Wilson in *The Truly Disadvantaged* as hypotheses worthy of investigation. While it is not clear that these hypotheses will survive rigorous examination, nevertheless they warrant such consideration. A careful scientific analysis of Wilson's ideas will send researchers forward onto unexplored and more creative research paths, requiring us to develop new sources of data and adopt better methodologies and statistical techniques. But this is a challenge well worth accepting, since it will likely lead to a more comprehensive understanding of fertility, family formation and other demographic behaviors. Reading *The Truly Disadvantaged* is the necessary first step, one that the reader is unlikely to regret.

## Correction

In "Public Funding of Family Planning, Sterilization and Abortion Services, 1987," by Rachel Benson Gold and Sandra Guardado [**20**:228, 1988], the second sentence of the second paragraph on page 228 should have read: "The federal government provided 97 percent of the funding, 91 percent through the Medicaid program." In Table 1 of this article, the amount of state expenditures for family planning reported by California should have been $27 million (not $27,000). The total amount of state funds spent nationwide should have been $76 million, and total national expenditures should have been $412 million. Thus, total state expenditures actually rose from 1986 to 1987.

Family Planning

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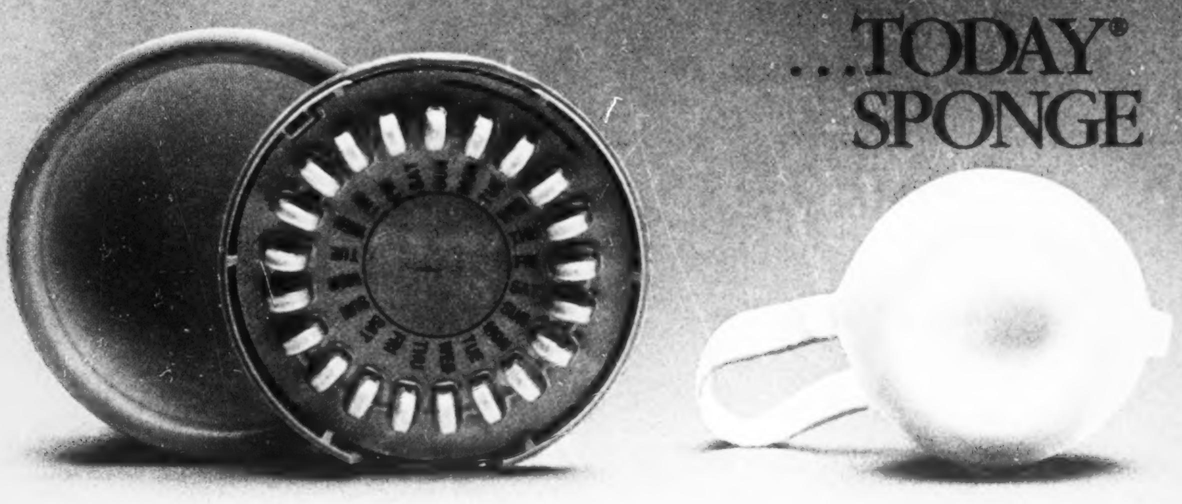

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Family Planning
# Perspectives
Volume 21, Number 2, March/April 1989

Barriers to the Use of Prenatal Care
Latest Evidence on the Pill and Breast Cancer

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Please see brief summary of prescribing information on next page.

**LOESTRIN, 21**
(Norethindrone Acetate and Ethinyl Estradiol Tablets, USP)

**LOESTRIN, Fe**
(Norethindrone Acetate and Ethinyl Estradiol Tablets, USP and Ferrous Fumarate Tablets, USP)

**Before prescribing, please see full prescribing information. A Brief Summary follows:**
**INDICATIONS AND USAGE:** Loestrin 21 and Loestrin Fe are indicated for the prevention of pregnancy in women who elect to use oral contraceptives (OCs) as a method of contraception. **Dose-Related Risk of Thromboembolism from Oral Contraceptives:** Two studies have shown a positive association between the dose of estrogens in oral contraceptives and the risk of thromboembolism. For this reason, it is prudent and in keeping with good principles of therapeutics to minimize exposure to estrogen. The OC product prescribed for any given patient should be that product which contains the least amount of estrogen that is compatible with an acceptable pregnancy rate and patient acceptance. It is recommended that new acceptors of OCs be started on preparations containing 0.05 mg or less of estrogen. **CONTRAINDICATIONS:** OCs should not be used in women with any of the following conditions: 1. Thrombophlebitis or thromboembolic disorders. 2. A past history of deep vein thrombophlebitis or thromboembolic disorders. 3. Cerebral vascular or coronary artery disease. 4. Known or suspected carcinoma of the breast. 5. Known or suspected estrogen dependent neoplasia. 6. Undiagnosed abnormal genital bleeding. 7. Known or suspected pregnancy (see Warning No. 5). 8. Benign or malignant liver tumor which developed during the use of oral contraceptives or other estrogen containing products.

**WARNINGS**

**Cigarette smoking increases the risk of serious cardiovascular side effects from oral contraceptive use. This risk increases with age and with heavy smoking (15 or more cigarettes per day) and is quite marked in women over 35 years of age. Women who use oral contraceptives should be strongly advised not to smoke.**

The use of oral contraceptives is associated with increased risk of several serious conditions including thromboembolism, stroke, myocardial infarction, hepatic adenoma, gallbladder disease, and hypertension. Practitioners prescribing oral contraceptives should be familiar with the following information relating to these risks.

1. *Thromboembolic Disorders and Other Vascular Problems.* An increased risk of thromboembolic and thrombotic disease associated with the use of OCs is well established. Three principal studies in Great Britain and three in the United States have demonstrated an increased risk of fatal and nonfatal venous thromboembolism and stroke, both hemorrhagic and thrombotic. These studies estimate that users of OCs are 4 to 11 times more likely than nonusers to develop these diseases without evident cause. **Cerebrovascular Disorders:** In a collaborative American study of cerebrovascular disorders in women with and without predisposing causes, it was estimated that the risk of hemorrhagic stroke was 2.0 times greater in users than in nonusers and the risk of thrombotic stroke was 4 to 9.5 times greater in users than in nonusers. **Myocardial Infarction:** An increased risk of myocardial infarction associated with the use of OCs has been reported, confirming a previously suspected association. These studies, conducted in the United Kingdom, found, as expected, that the greater the number of underlying risk factors for coronary artery disease (cigarette smoking, hypertension, hypercholesterolemia, obesity, diabetes, history of preeclamptic toxemia), the higher the risk of developing myocardial infarction, regardless of whether the patient was an OC user or not. OCs, however, were found to be a clear additional risk factor. In terms of relative risk, it has been estimated that OC users who do not smoke (smoking is considered a major predisposing condition to myocardial infarction) are about twice as likely to have a fatal myocardial infarction as nonusers who do not smoke. OC users who are also smokers have about a 5 fold increased risk of fatal infarction compared to users who do not smoke, but about a 10- to 12 fold increased risk compared to nonusers who do not smoke. Furthermore, the amount of smoking is also an important factor. In determining the importance of these relative risks, however, the baseline rates for various age groups must be given serious consideration. The importance of other predisposing conditions mentioned above in determining relative and absolute risks has not as yet been quantified; it is quite likely that the same synergistic action exists, but perhaps to a lesser extent. **Risk of Dose:** In an analysis of data derived from several national adverse reaction reporting systems, British investigators concluded that the risk of thromboembolism, including coronary thrombosis, is directly related to the dose of estrogen used in oral contraceptives. Preparations containing 100 mcg or more of estrogen were associated with a higher risk of thromboembolism than those containing 50 to 80 mcg of estrogen. Their analysis did suggest, however, that the quantity of estrogen may not be the sole factor involved. This finding has been confirmed in the United States. Careful epidemiological studies to determine the degree of thromboembolic risk associated with progestogen only OCs have not been performed. Cases of thromboembolic disease have been reported in women using these products, and they should not be presumed to be free of excess risk. **Persistence of Risk:** In confirmation of earlier reports, two studies have suggested that an increased risk may persist for as long as 6 years after discontinuation of oral contraceptive use for cerebrovascular disease and 9 years for myocardial infarction. In addition, a prospective study suggested the persistence of risk for subarachnoid hemorrhage. **Estimate of Excess Mortality from Circulatory Diseases:** A large prospective study carried out in the U.K. estimated the mortality rate per 100,000 women per year from diseases of the circulatory system for users and nonusers of OCs according to age, smoking habits, and duration of use. The overall excess death rate annually from circulatory diseases for OC users was estimated to be 20 per 100,000 (ages 15 to 34 – 5/100,000; ages 35 to 44 – 33/100,000; ages 45 to 49 – 140/100,000), the risk being concentrated in older women, in those with a long duration of use, and in cigarette smokers. It was not possible, however, to examine the interrelationships of age, smoking, and duration of use, nor to compare the effects of continuous versus intermittent use. Although the study showed a 10 fold increase in death due to circulatory diseases in users for 5 or more years, all of these deaths occurred in women 35 or older. Until larger numbers of women under 35 with continuous use for 5 or more years are available, it is not possible to assess the magnitude of the relative risk for this younger age group. The available data from a variety of sources have been analyzed to estimate the risk of death associated with various methods of contraception. The estimates of risk of death for each method include the combined risk of the contraceptive method (eg, thromboembolic and thrombotic disease in the case of oral contraceptives) plus the risk attributable to pregnancy or abortion in the event of method failure. This latter risk varies with the effectiveness of the contraceptive method. The study concluded that the mortality associated with all methods of birth control is low and below that associated with childbirth, with the exception of OCs in women over 40 who smoke. (The rates given for pill only/smokers for each age group are for smokers as a class. For "heavy" smokers [more than 15 cigarettes a day], the rates given would be about double; for "light" smokers [less than 15 cigarettes a day], about 50 percent.) The lowest mortality is associated with the condom or diaphragm backed up by early abortion. The risk of thromboembolic and thrombotic disease associated with OCs increases with age after approximately age 30 and, for myocardial infarction, is further increased by hypertension, hypercholesterolemia, obesity, diabetes, or history of preeclamptic toxemia and especially by cigarette smoking. The physician and the patient should be alert to the earliest manifestations of thromboembolic and thrombotic disorders (eg, thrombophlebitis, pulmonary embolism, cerebrovascular insufficiency, coronary occlusion, retinal thrombosis, and mesenteric thrombosis). Should any of these occur or be suspected, the drug should be discontinued immediately. A four- to six fold increased risk of postsurgery thromboembolic complications has been reported in OC users. If feasible, OCs should be discontinued at least 4 weeks before surgery of a type associated with an increased risk of thromboembolism or prolonged immobilization. 2. *Ocular Lesions.* There have been reports of neuro-ocular lesions, such as optic neuritis or retinal thrombosis, associated with the use of OCs. Discontinue OC medication if there is unexplained, sudden or gradual, partial or complete loss of vision; onset of proptosis or diplopia; papilledema; or retinal vascular lesions, and institute appropriate diagnostic and therapeutic measures. 3. *Carcinoma.* Long term continuous administration of either natural or synthetic estrogen in certain animal species increases the frequency of carcinoma of the breast, cervix, vagina, and liver. Certain synthetic progestogens, none currently contained in OCs, have been noted to increase the incidence of mammary nodules, benign and malignant, in dogs. In humans, three case control studies have reported an increased risk of endometrial carcinoma associated with the prolonged use of exogenous estrogen in postmenopausal women. One publication reported on the first 21 cases submitted by physicians to a registry of cases of adenocarcinoma of the endometrium in women under 40 on OCs. Of the cases found in women without predisposing risk factors for adenocarcinoma of the endometrium (eg, irregular bleeding at the time OCs were first given, polycystic ovaries), nearly all occurred in women who had used a sequential OC. These products are no longer marketed. No evidence has been reported suggesting an increased risk of endometrial cancer in users of conventional combination or progestogen only OCs. Several studies have found no increase in breast cancer in women taking OCs or estrogens. One study, however, while also noting no overall increased risk of breast cancer in women treated with OCs, found an excess risk in the subgroups of OC users with documented benign breast disease. A reduced occurrence of benign breast tumors in users of OCs has been well documented. In summary, there is at present no confirmed evidence from human studies of an increased risk of cancer associated with OCs. Close clinical surveillance of all women taking OCs is, nevertheless, essential. In all cases of undiagnosed persistent or recurrent abnormal vaginal bleeding, appropriate diagnostic measures should be taken to rule out malignancy. Women with a strong family history of breast cancer or who have breast nodules, fibrocystic disease, or abnormal mammograms should be monitored with particular care if they elect to use OCs instead of other methods of contraception. 4. *Hepatic Tumors.* Benign hepatic adenomas have been found to be associated with the use of OCs. One study showed that OC formulations with high hormonal potency were associated with a higher risk than lower potency formulations. Although benign, hepatic adenomas may rupture and may cause death through intra-abdominal hemorrhage. This has been reported in short term as well as long-term users of OCs. Two studies relate risk with duration of use of the contraceptive, the risk being much greater after 4 or more years of OC use. While hepatic adenoma is a rare lesion, it should be considered in women presenting abdominal pain and tenderness, abdominal mass or shock. A few cases of hepatocellular carcinoma have been reported in women taking oral contraceptives. The relationship of these drugs to this type of malignancy is not known at this time. 5. *Use in or Immediately Preceding Pregnancy, Birth Defects in Offspring, and Malignancy in Female Offspring.* The use of female sex hormones – both estrogenic and progestational agents – during early pregnancy may seriously damage the offspring. It has been shown that females exposed *in utero* to diethylstilbestrol, a nonsteroidal estrogen, have an increased risk of developing in later life a form of vaginal or cervical cancer that is ordinarily extremely rare. This risk has been estimated to be of the order of 1 in 1,000 exposures or less. Although there is no evidence at the present time that OCs further enhance the risk of developing this type of malignancy, such patients should be monitored with particular care if they elect to use OCs instead of other methods of contraception. Furthermore, a high percentage of such exposed women (from 30% to 90%) have been found to have epithelial changes of the vagina and cervix. Although these changes are histologically benign, it is not known whether this condition is a precursor of vaginal malignancy. Male children so exposed may develop abnormalities of the urogenital tract. Although similar data are not available with the use of other estrogens, it cannot be presumed that they would not induce similar changes. An increased risk of congenital anomalies, including heart defects and limb defects, has been reported with the use of sex hormones, including OCs, in pregnancy. One case control study has estimated a 4.7 fold increase in risk of limb reduction defects in infants exposed *in utero* to sex hormones (OCs, hormonal withdrawal tests for pregnancy or attempted treatment for threatened abortion). Some of these exposures were very short and involved only a few days of treatment. The data suggest that the risk of limb reduction defects in exposed fetuses is somewhat less than 1 in 1,000 live births. In the past, female sex hormones have been used during pregnancy in an attempt to treat threatened or habitual abortion. There is considerable evidence that estrogens are ineffective for these indications, and there is no evidence from well controlled studies that progestogens are effective for these uses. There is some evidence that triploidy and possibly other types of polyploidy are increased among abortuses from women who become pregnant soon after ceasing OCs. Embryos with these anomalies are virtually always aborted spontaneously. Whether there is an overall increase in spontaneous abortion of pregnancies conceived soon after stopping OCs is unknown. It is recommended that for any patient who has missed two consecutive periods, pregnancy should be ruled out before continuing the contraceptive regimen. If the patient has not adhered to the prescribed schedule, the possibility of pregnancy should be considered at the time of the first missed period, and further use of OCs should be withheld until pregnancy has been ruled out. If pregnancy is confirmed, the patient should be apprised of the potential risks to the fetus and the advisability of continuation of the pregnancy should be discussed in the light of these risks. It is also recommended that women who discontinue oral contraceptives with the intent of becoming pregnant use an alternate form of contraception for a period of time before attempting to conceive. Many clinicians recommend 3 months although no precise information is available on which to base this recommendation. The administration of progestogen-only or progestogen estrogen combinations to induce withdrawal bleeding should not be used as a test of pregnancy. 6. *Gallbladder Disease.* Studies report an increased risk of surgically confirmed gallbladder disease in users of OCs and estrogens. In one study, an increased risk appeared after 2 years of use and doubled after 4 or 5 years of use. In one of the other studies, an increased risk was apparent between 6 and 12 months of use. 7. *Carbohydrate and Lipid Metabolic Effects.* A decrease in glucose tolerance has been observed in a significant percentage of patients on OCs. For this reason, prediabetic and diabetic patients should be carefully observed while receiving OCs. An increase in triglycerides and total phospholipids has been observed in patients receiving OCs. The clinical significance of this finding remains to be defined. 8. *Elevated Blood Pressure.* An increase in blood pressure has been reported in patients receiving OCs. In some women, hypertension may occur within a few months of beginning OC use. In the first year of use, the prevalence of women with hypertension is low in users and may be no higher than that of a comparable group of nonusers. The prevalence in users increases, however, with longer exposure, and in the fifth year of use is two and a half to three times the reported prevalence in the first year. Age is also strongly correlated with the development of hypertension in OC users. Women who previously have had hypertension during pregnancy may be more likely to develop elevation of blood pressure when given OCs. Hypertension that develops as a result of taking OCs usually returns to normal after discontinuing the drug. 9. *Headache.* The onset or exacerbation of migraine or development of headache of a new pattern which is recurrent, persistent, or severe, requires discontinuation of OCs and evaluation of the cause. 10) *Bleeding Irregularities.* Breakthrough bleeding, spotting and amenorrhea are frequent reasons for patients discontinuing OCs. In breakthrough bleeding, as in all cases of irregular bleeding from the vagina, nonfunctional causes should be borne in mind. In undiagnosed persistent or recurrent abnormal bleeding from the vagina, adequate diagnostic measures are indicated to rule out pregnancy or malignancy. If pathology has been excluded, time or a change to another formulation may solve the problem. Changing to an OC with a higher estrogen content, while potentially useful in minimizing menstrual irregularity, should be done only if necessary since this may increase the risk of thromboembolic disease. Women with a past history of oligomenorrhea or secondary amenorrhea or young women without regular cycles may have a tendency to remain anovulatory or to become amenorrheic after discontinuation of OCs. Women with these preexisting problems should be advised of this possibility and encouraged to use other contraceptive methods. Post use anovulation, possibly prolonged, may also occur in women without previous irregularities. 11. *Ectopic Pregnancy.* Ectopic as well as intrauterine pregnancy may occur in contraceptive failures. However, in progestogen-only OC failures, the ratio of ectopic to intrauterine pregnancies is higher than in women who are not receiving OCs, since the drugs are more effective in preventing intrauterine than ectopic pregnancies. 12. *Breast Feeding.* OCs given in the postpartum period may interfere with lactation. There may be a decrease in the quantity and quality of the breast milk. Furthermore, a small fraction of the hormonal agents in OCs has been identified in the milk of mothers receiving these drugs. The effects, if any, on the breast fed child have not been determined. If feasible, the use of OCs should be deferred until the infant has been weaned. **PRECAUTIONS: General:** 1. A complete medical and family history should be taken prior to the initiation of OCs. The pretreatment and periodic physical examinations should include special reference to blood pressure, breasts, abdomen and pelvic organs, including Papanicolaou smear and relevant laboratory tests. As a general rule, OCs should not be prescribed for longer than 1 year without another physical examination being performed. 2. Under the influence of estrogen progestogen preparations preexisting uterine leiomyomata may increase in size. 3. Patients with a history of psychic depression should be carefully observed and the drug discontinued if depression recurs to a serious degree. Patients becoming significantly depressed while taking OCs should stop the medication and use an alternate method of contraception in an attempt to determine whether the symptom is drug related. 4. OCs may cause some degree of fluid retention. They should be prescribed with caution, and only with careful monitoring, in patients with conditions which might be aggravated by fluid retention, such as convulsive disorders, migraine syndrome, asthma, or cardiac or renal insufficiency. 5. Patients with a past history of jaundice during pregnancy have an increased risk of recurrence of jaundice while receiving OC therapy. If jaundice develops in any patient receiving such drugs, the medication should be discontinued. 6. Steroid hormones may be poorly metabolized in patients with impaired liver function and should be administered with caution in such patients. 7. OC users may have disturbances in normal tryptophan metabolism which may result in a relative pyridoxine deficiency. The clinical significance of this is yet to be determined. 8. Serum folate levels may be depressed by OC therapy. Since the pregnant woman is predisposed to the development of folate deficiency and the incidence of folate deficiency increases with increasing gestation, it is possible that if a woman becomes pregnant shortly after stopping OCs, she may have a greater chance of developing folate deficiency and complications attributed to this deficiency. 9. The pathologist should be advised of OC therapy when relevant specimens are submitted. 10. Certain endocrine and liver function tests and blood components may be affected by estrogen containing OCs: a. Increased sulfobromophthalein retention. b. Increased prothrombin and factors VII, VIII, IX, and X; decreased antithrombin 3; increased norepinephrine-induced platelet aggregability. c. Increased thyroid binding globulin (TBG) leading to increased circulating total thyroid hormone, as measured by protein bound iodine (PBI), T4 by column, or T4 by radioimmunoassay. Free T3 resin uptake is decreased, reflecting the elevated TBG; free T4 concentration is unaltered. d. Decreased pregnanediol excretion. e. Reduced response to metyrapone test. **INFORMATION FOR THE PATIENT:** See Patient Labeling. **DRUG INTERACTIONS:** Reduced efficacy and increased incidence of breakthrough bleeding have been associated with concomitant use of rifampin. A similar association has been suggested with barbiturates, phenylbutazone, phenytoin sodium, tetracycline, and ampicillin. **CARCINOGENESIS, PREGNANCY, NURSING MOTHERS:** See Contraindications and Warnings sections. **ADVERSE REACTIONS:** An increased risk of the following serious adverse reactions has been associated with the use of OCs (see Warnings): Thrombophlebitis, pulmonary embolism, coronary thrombosis, cerebral thrombosis, cerebral hemorrhage, hypertension, gallbladder disease, benign hepatomas, congenital anomalies. There is evidence of an association between the following conditions and the use of OCs, although additional confirmatory studies are needed: Mesenteric thrombosis, neuro-ocular lesions, eg, retinal thrombosis and optic neuritis. The following adverse reactions have been reported in patients receiving OCs and are believed to be drug related: Nausea and/or vomiting, usually the most common adverse reactions, occur in approximately 10 percent or less of patients during the first cycle. Other reactions, as a general rule, are seen much less frequently or only occasionally: Gastrointestinal symptoms (such as abdominal cramps and bloating); breakthrough bleeding; spotting; change in menstrual flow; dysmenorrhea; amenorrhea during and after treatment; temporary infertility after discontinuance of treatment; edema; chloasma or melasma which may persist; breast changes: tenderness, enlargement and secretion; change in weight (increase or decrease); change in cervical erosion and cervical secretion; possible diminution in lactation when given immediately postpartum; cholestatic jaundice; migraine; increase in size of uterine leiomyomata; rash (allergic); mental depression; reduced tolerance to carbohydrates; vaginal candidiasis; change in corneal curvature (steepening); intolerance to contact lenses. The following adverse reactions have been reported in users of OCs, and the association has been neither confirmed nor refuted: Premenstrual-like syndrome; cataracts; changes in libido; chorea; changes in appetite; cystitis-like syndrome; headache; nervousness; dizziness; hirsutism; loss of scalp hair; erythema multiforme; erythema nodosum; hemorrhagic eruption; vaginitis; porphyria; hemolytic uremic syndrome. **ACUTE OVERDOSE:** Serious ill effects have not been reported following acute ingestion of large doses of OCs by young children. Overdosage may cause nausea, and withdrawal bleeding may occur in females. **HOW SUPPLIED:** Loestrin **21** 1/20 is available in dispensers each containing 21 tablets. Each tablet contains 1 mg of norethindrone acetate and 20 mcg of ethinyl estradiol. Available in packages of five dispensers. Loestrin **Fe** 1/20 is available in dispensers each containing 21 white tablets and 7 brown tablets. 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# Family Planning
# Perspectives

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# Editorial

## Sex Education in the Schools: Policies and Practice

*By Jeannie I. Rosoff*

Sex education in the schools has generally been an extremely volatile issue. At one pole of the occasionally acrimonious debate are some parents and a few church groups who insist that the public schools should play no role at all in educating children about sex-related matters. At the other pole is the very large group who agree that school involvement in sex education not only is proper but is necessary as well. Although most parents believe that they should be the chief transmitters of values to their children, they also admit to limited knowledge and a limited ability to discuss sex-related matters adequately with their young. They, in fact, welcome the kind of straightforward and objective instruction they believe can be provided in the classroom. As public opinion polls have shown, there is now substantial support even for school sex education courses that provide birth control information to 12-year-olds or that cover homosexuality and abortion.

Many of those who support sex education in the schools intuitively believe that improved knowledge about sex and sexual behavior will help to protect young people from the potentially harmful effects of sexual activity—chief among them, unintended pregnancy, AIDS and other sexually transmitted diseases (STDs). The studies conducted thus far do seem to show that students exposed to sex education have more factual knowledge than those not exposed to it, and that sexually active students who receive sex education may be more likely to use contraceptives. At the same time, sex education does not seem to encourage teenagers to initiate sexual activity, as some parents still fear.

However, the final word on sex education is not yet in. One reason that the impact of sex education on adolescent behavior has been difficult to pin down is that little has been known nationwide about the content, quantity or quality of the information imparted under the rubric of sex education. The lack of such information is not surprising. To date, most studies have been conducted at the local level and are of limited applicability to other areas of the country; the few national studies that have been carried out have not provided much in-depth information on education policies at the state or local levels. And except for a decade-old study conducted by the National Institute of Education, little research has been done on what is being taught in the classroom—especially about STDs, AIDS and pregnancy prevention—much less on how these subjects are taught.

The two studies reported in this issue, both carried out by the staff of The Alan Guttmacher Institute in the spring of 1988, represent a major step forward in providing some solid baseline data in this area. One of the studies focuses on policies and curricula at the state and district levels, and the other, on the content of classroom instruction and the difficulties encountered by teachers. Neither study attempts to review the entire content of sex education, concentrating instead on the subjects of pregnancy prevention and prevention of sexually transmitted infections. The studies were intended to serve as a starting point in the effort to identify the strengths and weaknesses of existing programs and to develop well thought-out policies and programs at all levels—state, district and local—especially in relation to the topics of pregnancy prevention, AIDS and STDs. Obviously, given the diversity of the country, the complexity and sensitivity of the topics themselves, and the intricate relationship between policy and practice, we are far from having attained enlightenment in this area.

Nevertheless, two general observations appear to be in order, although there are no previous benchmark studies with which comparisons can reliably be made. First, in a relatively few years, the number of states that require or encourage the teaching of sex education has grown enormously. It is clear that fear of the AIDS epidemic—and, perhaps, the influx of funds for instruction about AIDS—has been a major element in spurring state interest and concern. Indeed, the policies and curricula addressing AIDS tend to be much more specific and detailed than those dealing with other aspects of sex education, in particular the prevention of pregnancy. With a few notable exceptions, the states have provided little leadership in setting the scope, content and purpose of sex education programs or in assisting with the "mechanics" of teaching this topic. That has not been the case for other areas of the curriculum (such as math or English).

Second, the teaching of sex education, although often very limited, is now the norm in most of the nation's secondary schools. To a surprising degree, subjects previously viewed as almost taboo are taught or are at least touched upon in the majority of classrooms. However, teachers provide this instruction not without some difficulty; the biggest problem they face is pressure from parents, the community or their own school administrators.

Teachers place great stress on the desirability of abstinence and the dangers of sexual activity, but they are well aware that many of their students are already sexually active. As a result, they strongly believe that instruction should be undertaken much earlier than is now the case and that they should provide information designed to help protect young people from the most serious consequences of their sexual activity. The prevention of pregnancy, however, falls far behind AIDS

*(Continued on page 64)*

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Jeannie I. Rosoff is president of The Alan Guttmacher Institute.

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# UPDATE

### Bad Timing

In the United States, births are most likely to occur in August–September and December–February, and are least likely in April and May. However, surveys have shown that people consider April and May to be the best months to have a child, and August, December and January to be the worst. Using data from the 1982 National Survey of Family Growth, researchers have found that U.S. couples in fact follow a seemingly rational pattern of decision-making: Women are most likely to discontinue contraceptive use to become pregnant in June and July (about nine months away from April), and are least likely to do so in February, March and April (nine months from the following November, December and January).[1] However, because the mean interval between discontinuation and conception is five months, the result is a birth bulge in exactly the months many Americans consider least opportune for childbearing. The investigators suggest that the paradox can be at least partially explained by couples' failure to consider the lag that is likely between when they begin trying to get pregnant and when they finally succeed.

1. J. L. Rodgers and J. R. Udry, "The Season-of-Birth Paradox," *Social Biology*, Vol. 35, No. 3–4, 1988, p. 171.

### What Teens Don't Know

When some 11,500 eighth-grade and 10th-grade students were asked about AIDS and STDs in a 1987 national survey, only 35 percent said that they had received instruction in school about AIDS, and only 32 percent had learned about STDs.[1] Nearly all knew that AIDS can be transmitted sexually, nine in 10 knew that it can be spread through needle-sharing and almost as many were aware that condom use decreases one's risk of being infected. On the other hand, almost half thought that a person can contract AIDS by donating blood and only half knew that HIV infection cannot be prevented by washing after intercourse. Two-thirds knew that having a sore on the genitals is a common early sign of STD infection, and more than half knew that it is dangerous to wait to see if such a sore goes away, but only about one-third were aware that washing after intercourse is not an effective way of preventing infection.

1. "Results from the National Adolescent Student Health Survey," *Morbidity and Mortality Weekly Report*, **38**:147, 1989.

### Legal Wrangling

As oral arguments approached in the Supreme Court's consideration of *Webster* v. *Reproductive Health Services* (the abortion case believed by many abortion opponents to present an excellent opportunity for overturning *Roe* v. *Wade*), a report from Washington indicated that Justice Department staff are far from unanimous in their support for the government's decision to intervene in the case.[1] One month after the Justice Department filed an *amicus curiae* brief asking that *Roe* v. *Wade* be struck down, at least 50 staff lawyers are said to have signed a petition protesting the department's involvement in attempts to set aside the 1973 decision. The protesting lawyers argue that the Justice Department has no compelling reason to become involved in the case.

1. M. Wines, "Justice Dept. Lawyers Assail Anti-Abortion Effort," *New York Times*, Mar. 26, 1989, p. 19.

### Back to the Drawing Board?

Tests of the levonorgestrel-releasing intracervical device—a hormonal contraceptive device resembling the IUD but designed to rest just inside the woman's cervix, rather than inside the uterus—have shown it to have a relatively low two-year pregnancy rate but a fairly high expulsion rate.[1] Almost 200 Finnish women agreed to use the device, and 57 percent were still using it two years later. The cumulative failure rate after two years was 3.5 percent; all seven pregnancies occurred in the first year of use, and six were the result of unnoticed expulsion of the device. Eighteen of the 200 women expelled the device but did not become pregnant, for an expulsion rate of nine percent. Another 30 percent of the women had the devices removed, one-third because of bleeding problems. The investigators comment that most of the expulsions and pregnancies took place in the first six months of use, and that women relying on the intracervical device would probably have to make at least one clinic visit during the first six months of use to have its positioning checked. They concede, as well, that "further development of the design of the device may be indicated."

1. K. Ratsula, "Clinical Performance of a Levonorgestrel-Releasing Intracervical Contraceptive Device During the First Two Years of Use," *Contraception*, **39**:187, 1989.

### Pregnancy and AIDS

Drug-addicted pregnant women infected with the AIDS virus appear to experience no more adverse pregnancy outcomes than do uninfected addicts, nor does their pregnancy appear to accelerate the infection's progress.[1] Among pregnant women enrolled in a methadone treatment program in New York City, those who were HIV-infected were no more likely than the uninfected to have a spontaneous abortion, ectopic pregnancy, premature delivery, stillbirth or low-birth-weight baby. There also were no differences in the two groups' rates of delivery-related or neonatal complications. Nor were seropositive women more likely than those who were seronegative to terminate their pregnancies.

However, the HIV-infected women were more likely to catch pneumonia during pregnancy, and were also more likely to have a cesarean delivery. Although some of the excess in cesareans was due to a higher rate of elective c-sections among the HIV-positive women, it was also related to a greater likelihood of breech presentation among these women. None of the infected women had progressed to AIDS by a year after delivery.

[1] P. A. Selwyn et al., "Prospective Study of Human Immunodeficiency Virus Infection and Pregnancy Outcomes in Intravenous Drug Users," *Journal of the American Medical Association*, **261**:1289, 1989.

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### Who Gets Free Condoms?

The public health department of a medium-sized city in Illinois dispenses free condoms at its family planning clinic to any male who comes to the facility. Over a period of four weeks, male clients were asked to complete a questionnaire requesting information about their reasons for using the condom service and about their sexual and contraceptive experience. A total of 73 males requested condoms during that period, 60 of them 21 or younger.[1] Nearly three-quarters of the latter had had more than one partner in the preceding two months, and nearly half said they had had intercourse seven or more times each month. Two-thirds reported that they or their partner used no other method of birth control. Most said they had learned about the free condom program from a friend; almost none had found out about it through a "formal" information source. The main reasons they relied on the public health department were that the condoms are free and that no questions are asked. The study team estimates that if this four-week period was typical, there would be nearly 1,000 visits by men for free condoms each year.

[1] M. Glasser et al., "Characteristics of Males at a Public Health Department Contraceptive Service," *Journal of Adolescent Health Care*, **10**:115, 1989.

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### Life Expectancy of Blacks Declines

A black child born in the United States in 1986 could be expected to live six years less than a white baby.[1] The mean life expectancy for a white child born in that year was 75.4 years, whereas that of a black baby was only 69.4 years. White life expectancy has continued to rise steadily over the years, but life expectancy among blacks turned downward in 1984 and has continued to decrease since then. Much of the difference in life expectancy is attributable to the severe health problems that are found in the black community: Black infant mortality remains twice as high as white infant mortality, deaths among black adults from influenza and pneumonia are disproportionately frequent and black males are increasingly the victims of homicide and AIDS.

[1] National Center for Health Statistics, *Health: United States*, 1988, U.S. Government Printing Office, Washington, D.C., 1989.

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### No More Vacations

For many couples, pregnancy often has meant a respite from the need to use contraceptives. However, according to the National Family Planning and Reproductive Health Association, that day is past.[1] Because of the current epidemic of sexually transmitted diseases, the association recommends that health care providers from now on routinely urge certain of their pregnant patients to use condoms at every act of intercourse. Special attention should be given to women whose partners (or who themselves) have a history or recent diagnosis of herpes simplex, chlamydia, HIV, human papilloma virus, trichomoniasis, gonorrhea, syphilis or hepatitis B; women whose partners may be having intercourse with someone else during the pregnancy; women whose partners are bisexual or intravenous drug users; and women who may themselves be having intercourse with someone other than their regular partner.

[1] M. F. Goldsmith, "Pregnancy Dx? Rx May Now Include Condoms," *Journal of the American Medical Association*, **261**:678, 1989.

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### Population Boom and Bust

The population declines seen in several Midwestern states during the early 1980s appear to be subsiding, while certain other states, plagued by economic woes, have been experiencing either some population shrinkage or a halt to their previous high growth rates.[1] Preliminary Census Bureau data show that the populations of Montana, North Dakota and West Virginia all fell by around three percent between 1985 and 1988, and that Wyoming's shrank by nearly eight percent over the same period. Moreover, while the populations of Florida and California are still growing at a brisk pace (by nine percent and seven percent, respectively), the population of Texas, at one time expanding rapidly, grew by only about two percent over the three-year period. Overall, the West grew by some six percent, one and one-half times as rapidly as the South (four percent) and far more quickly than either the Northeast (under two percent) or the Midwest (one percent).

[1] "New State Estimates," *Population Today*, Vol. 17, No. 2, 1989, p. 8.

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### Beware of Smog

The high ozone levels often found in urban smog can cause exposed condoms to deteriorate rapidly, according to a recent research report.[1] Nonlubricated latex condoms that were unwrapped, unrolled and exposed in the laboratory to 0.3 parts per million of ozone lost more than half of their strength within 48 hours. Although most condoms may be protected from such deterioration by their lubrication (as well as by their packaging), the investigators suggest that the effectiveness of condom packaging be studied further. They point out that antiozonant treatments currently used to protect rubber tires from the effects of ozone might be used to guard condoms as well. The impact of ozone on rubber surgical gloves (an important clinical protection against AIDS infection) also will need further examination.

[1] L. J. Clark, R. P. Sherwin and R. F. Baker, "Latex Condom Deterioration Accelerated by Environmental Factors: I. Ozone," *Contraception*, **39**:245, 1989.

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### Midwife at the Bedside

Three percent of all births in the United States in 1985 and 1986 were attended by midwives, a figure that represents a more than 200 percent increase in the number of such births since 1975.[1] The vast majority of the 1985–1986 births took place in a hospital, with just a small percentage occurring outside the hospital. Women attended by a midwife in a hospital were more likely than those cared for by a physician to be nonwhite, younger than 20, unmarried and less educated. Those seen outside of hospitals by midwives, on the other hand, tended to be older white married women who were better educated than average and were having a third or higher order birth. Regardless of where they delivered, women attended by midwives were more likely to be foreign-born (especially Mexican) and to have begun prenatal care late. Women who were assisted by midwives at delivery appeared to have birth outcomes at least as good as those of women who were attended by doctors.

[1] C. T. Lewis, "A Current Perspective on Midwife-Attended Births," paper presented at the annual meeting of the American Public Health Association, Boston, Nov. 13–17, 1988.

# Sex Education and AIDS Education in the Schools: What States and Large School Districts Are Doing

*By Asta M. Kenney, Sandra Guardado and Lisanne Brown*

## Summary

Four-fifths of the states either require or encourage the teaching of sex education in the public schools, and nearly nine in 10 large school districts across the United States support such instruction. All but four states and virtually every large school district support the provision of AIDS education, and backing for instruction about sexually transmitted diseases and about abstinence is nearly as widespread. Fewer states and districts (two-thirds and four-fifths, respectively) require or encourage the schools to teach about pregnancy prevention. Examination of state and district curricula indicates that large school districts tend to be bolder than the states in the range of sex-related topics covered, especially in the area of pregnancy prevention. Districts also offer local educators more support (through curricula, training and other activities) than do the states. Finally, AIDS education appears to be receiving more attention and funding from both the states and the local school districts than is sex education.

**The largest school districts clearly support education to help young people avoid becoming pregnant or contracting AIDS, and in their curricula emphasize that abstinence from sexual relations is the most effective strategy for achieving this aim.**

## Introduction

Support for sex education in the schools has increased steadily in recent years. More than 85 percent of the American public now approve of such instruction, compared with 69 percent in 1965 and 76 percent in 1975.[1] Support even extends to some of the more sensitive topics within sex education: A 1986 survey found that 77 percent of Americans believe sex education courses for 12-year-olds should include information about birth control, and almost two-thirds believe such topics as homosexuality and abortion should be covered.[2]

Roughly 60 percent of teenagers receive at least some sex education. Fifty-nine percent of 12–17-year-olds surveyed in 1986 said that they had taken a course or had a class on sex education at some time, but only 35 percent of those surveyed had received "comprehensive" instruction (defined as education encompassing at least four out of six specific topics related to reproduction, sexual development and birth control).[3] In a 1984 survey, 60 percent of women and 52 percent of men in their 20s reported that they had taken a sex education course by age 19, but large proportions also said that they were sexually active before they ever took such a course.[4]

Only three national studies have looked at the content of sex education. A decade-old survey of teachers of sex education that was conducted by the National Institute of Education indicated that virtually all the teachers covered topics such as pregnancy, childbirth, anatomy and physiology and sexually transmitted diseases (STDs). About three out of four instructors addressed topics related to family planning (including abortion), and about two-thirds covered the avoidance of unwanted sex.[5]

A 1982 survey of city school districts found that in virtually all cases in which sex education was taught—in any form, not just as a separate course—such topics as changes at puberty, STDs, pregnancy and parenthood were covered. Over 80 percent of districts also covered information on communication with the opposite sex, sexual decision-making and the probability of becoming pregnant, and 72 percent presented information about contraceptives. The 1982 survey also found that sex education was usually integrated into other curriculum subjects rather than presented as a separate course.[6]

Finally, the 1986 poll of 12–17-year-olds cited earlier found that 39 percent had received instruction about different kinds of birth control, 30 percent had been told about where to get contraceptives and 32 percent had received some information about abortion.[7] Thus, previous research has shown that schools generally offer sex education, including education on how to prevent pregnancy and transmission of STDs, but not all young people receive such instruction, nor do they all receive it in a timely fashion.

Little information exists, however, on other important topics, such as the detailed content of classroom instruction, the subject matter that state education agencies and local school districts encourage educators to cover and the means by which agencies and districts help the schools. In order to obtain such information, The Alan Guttmacher Institute conducted three surveys in 1988: One included 9,800 teachers in the disciplines most likely to teach sex education, another was of state education agencies and a third covered the 203 largest school districts in the country. The teachers survey is the subject of a separate article in this journal; the focus of this report is on the findings of the state and

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Asta M. Kenney is associate for policy development, Sandra Guardado is research assistant and Lisanne Brown is research/policy assistant with The Alan Guttmacher Institute. The research on which this article is based was supported in part by The Carnegie Corporation of New York; additional funding was provided by The Brush Foundation and The New York Times Company Foundation. The authors would like to thank Lana D. Muraskin, Jacqueline Darroch Forrest, Jane Silverman and Lisa Bezak for their invaluable assistance with the project upon which this article is based.

district surveys. In both of these, we sought to gather information about policies, curricula and program activities related to the teaching of sex education. The goal was to ascertain what kinds of information states and districts encourage schools to cover and what kinds of program activities they engage in, either to establish basic standards or to help local educators develop or strengthen their programs.

For the purposes of these surveys, sex education was defined in the questionnaire as instruction in the public schools about human sexual development, the process of reproduction and related topics. The focus was on instruction in grades 7–12 (approximately ages 12–18). Because some of the most important goals of sex education, at least in the public mind, relate to the postponement of sexual activity (i.e., abstinence) and to the prevention of pregnancy, STDs and AIDS, the study concentrated on instruction that might be expected to achieve these ends. Given the spurt of interest in AIDS education, we made a special effort in these surveys to examine the extent to which states and districts focus on AIDS education *without* making a parallel commitment to sex education.

Although in this study we have considered the topics of pregnancy prevention, STDs and AIDS to be components of sex education, educators (and others) do not always agree. Given the current level of concern over AIDS, education on this topic is widespread, but STDs and AIDS are not always covered in sex education or family life education; they may often be included in discussions of communicable diseases or some other subject instead.

The decision to look at sex education, instead of at the broader subject of health education, is not meant to suggest that this subject should be taught in isolation from other health-related topics. On the contrary, the survey instruments expressly stated our awareness that sex education is likely to be a component of health education, family life education, home economics or some other course.

## Methodology

Before the survey instruments were drafted, we reviewed relevant research in the fields of sex education and AIDS education and consulted with representatives of national education organizations and experts in education (and, specifically, in sex education and AIDS education). There were two reasons for taking this preliminary step. First, we wanted to determine what was already known about the policies, curricula and activities of the states and districts in these areas; second, we hoped to better understand how much state education agencies and local school districts can do to set standards and support and encourage instruction on any specific subject. Draft surveys were sent for review and comment to many of the individuals who had been consulted earlier in the process. In addition, the state survey was pretested by health education specialists in two state education agencies, while the district survey was pretested by the assistant superintendents of four large districts.

To glean information applicable to the largest number of students without having to include all school districts in the country, we elected to limit our survey to the 203 largest school districts in the country. As one might expect, they are predominantly urban (73 percent), with 25 percent suburban and only two percent rural. Nevertheless, the sample included not only the largest cities, such as New York City and Los Angeles, but also counties and much smaller cities; the smallest were Pasadena, California, and Mesquite, Texas, each of which has a K–12 enrollment of just over 22,500. The 203 districts, however, are scattered unevenly around the country: Fifty-five percent are in the South, 26 percent are in the West, 14 percent are in the North Central region and five percent are in the Northeast. Indeed, 10 states* have no districts represented in the sample, while 20 or more districts each are located in California, Florida and Texas and together account for 36 percent of the sample.

Both the state and the district surveys were mailed in late March 1988. The former went to the chief state school officer in each of the 50 states (plus the District of Columbia) and the latter was sent to the superintendent of each of the 203 districts. The questionnaire was usually completed by the individual responsible for health education in the state or district, rather than the addressee.

For the state survey, follow-up was conducted entirely by phone, and all recipients responded. Missing information was obtained and ambiguities were clarified by phone. For the district survey, a second mailing was sent to all districts that had not responded, and telephone calls were made to those that failed to respond to either mailing. In all, responses were received from 162 (80 percent) of the districts. While these districts represent only about one percent of the nearly 16,000 public school districts in the United States, they have 11.5 million students, or 29 percent of all public school students.

Response rates differ by region, ranging from 73 percent in the Northeast to 90 percent in the North Central region, but the geographic distribution of the respondents is very similar to the distribution of the sample—54 percent in the South, 25 percent in the West, 16 percent in the North Central region and five percent in the Northeast.

It is unclear what the implications of a heavily southern sample may be, although conventional wisdom would indicate that the findings of this study may be somewhat more conservative than those for the country as a whole. Conversely, one could argue that because these districts are predominantly urban, they may be more liberal than the rest of the country. It is also possible that districts that offer more sex education were more likely than other districts to complete the survey, so the data reported in this article should be interpreted with that possibility in mind.

Probably the major research limitation of these surveys stems from the fact that both state education agencies and large school districts usually treat sex education as a topic within health education or some other subject (although this does not necessarily represent a programmatic limitation). Thus, there is sometimes no separate policy or curriculum concerning sex education, and it is often difficult or impossible to accurately separate out from the broader subject area the amount of staff time, the expenditures and the program activities related specifically to sex education. It should also be kept in mind that the sex education field is currently a fast-changing one, so that the information presented in this article is accurate only as of mid-1988.

One key component of the two surveys was the analysis of curricula and curriculum guides (hereafter referred to collectively as "curricula") to determine how the topics of interest are addressed.† We used different approaches for the two surveys. State curricula covering sex education and AIDS education were actually collected, reviewed and analyzed. (Many of the AIDS

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*Delaware, Idaho, Maine, Montana, New Hampshire, North Dakota, Rhode Island, South Dakota, Vermont and Wyoming.

†The terms "curriculum" and "curriculum guide" had widely different meanings for the different survey respondents. We considered only documents that addressed the *content* of instruction, with some indication of grade-level placement of topics, as curricula. Documents that provided guidance on how to implement a program—covering such topics as needs assessment, teacher preparation, selection of materials and community involvement—were not considered to be curricula, even if the state classified them as such.

**Table 1. State education agencies' positions on the teaching of sex education and on the teaching of selected topics in local school districts, by state**

| State | Sex education | Selected topics | | | |
|---|---|---|---|---|---|
| | | Abstinence | Pregnancy prevention | AIDS | STDs |
| **Requires or encourages** | 41 | 41 | 33 | 47 | 44 |
| **Discourages or prohibits** | 0 | 0 | 2 | 0 | 0 |
| **No position** | 9 | 9 | 15 | 4 | 6 |
| Alabama | E | E | D | R | E |
| Alaska | E | NP | E | E | E |
| Arizona | NP | E | NP | E | NP |
| Arkansas | R | E | R | R | R |
| California | NP | E | E | E | E |
| Colorado | E | E | E | E | E |
| Connecticut | E | NP | NP | R | NP |
| Delaware | R | R | R | R | R |
| D.C. | R | R | R | R | R |
| Florida | E | E | E | E | E |
| Georgia | R | E | E | R | R |
| Hawaii | R | R | E | R | E |
| Idaho | E | E | E | E | E |
| Illinois | NP | R | NP | R | R |
| Indiana | E | R | NP | R | E |
| Iowa | R | E | R | R | R |
| Kansas | R | NP | NP | R | R |
| Kentucky | R | R | E | R | R |
| Louisiana | NP | R | E | NP | E |
| Maine | E | E | E | E | E |
| Maryland | R | E | E | R | E |
| Massachusetts | NP | NP | NP | NP | NP |
| Michigan | E | E | E | R | E |
| Minnesota | E | E | E | R | E |
| Mississippi | NP | NP | NP | NP | NP |
| Missouri | E | E | NP | E | E |
| Montana | E | E | E | E | E |
| Nebraska | E | E | E | E | E |
| Nevada | R | R | E | R | R |
| New Hampshire | E | E | E | R | R |
| New Jersey | R | NP | NP | E | E |
| New Mexico | R | R | R | R | R |
| New York | E | R, E* | E | R | E |
| North Carolina | NP | R | NP | R | R |
| North Dakota | E | NP | NP | E | E |
| Ohio | E | NP | E | R | R |
| Oklahoma | E | R | E | R | E |
| Oregon | E | R | E | R | R |
| Pennsylvania | E | E | NP | R | E |
| Rhode Island | R | R | NP | R | R |
| South Carolina | R | R | R, E† | E | R |
| South Dakota | nr | nr | nr | R | nr |
| Tennessee | E | E | E | R | E |
| Texas | NP | E | E | E | R |
| Utah | R | R | P | R | R |
| Vermont | R | R | R | R | R |
| Virginia | R | R | R | R | R |
| Washington | E | R | NP | R | NP |
| West Virginia | R | E | E | E | R |
| Wisconsin | E | E | E | E | E |
| Wyoming | NP | NP | NP | NP | NP |

*Required in AIDS education, encouraged in sex education.

†Required in grades 9–12; encouraged in grades 7–8.

Note: R=required; E=encouraged; D=discouraged; P=prohibited; NP=no position; nr=no response.

curricula were obtained with the assistance of the Council of Chief State School Officers and the National Association of State Boards of Education, which in 1987 had conducted surveys of state education agencies' activities concerning AIDS education.) In the district survey, on the other hand, recipients simply were asked whether their district has a curriculum on sex education or AIDS education (or both), and if it does, whether and in which grades the curriculum calls for certain topics to be discussed.

Surveys such as those discussed in this article are, of course, quantitative rather than qualitative; they cannot capture such crucial information as the content or quality of a training program or the caliber of assistance provided by an agency. These finer points are left for researchers to explore in the future.

### State Positions

Representatives of state education agencies were asked whether their state requires, encourages, discourages, prohibits or takes no position on local-level instruction on sex education and on the four topics of special interest—AIDS, other STDs, abstinence and the prevention of pregnancy. As Table 1 shows, as of mid-1988, the states generally supported sex education and instruction about the four specific topics. A total of 40 states and the District of Columbia either require or encourage sex education, and even more support education about AIDS (46 states and the District of Columbia) and STDs (43 states and the District of Columbia). The same number of states that back sex education in general support the teaching of abstinence, while just 32 states and the District of Columbia report that they require or encourage instruction about pregnancy prevention.

It may seem confusing that more states require or encourage AIDS education than support the seemingly broader subject of sex education. However, as was noted earlier, educators and others do not always consider discussion of STDs or AIDS to be a part of sex education.

Seventeen states and the District of Columbia actually *require* sex education—a dramatic increase over the four jurisdictions (Kentucky, Maryland, New Jersey and the District of Columbia) that did so in 1980.[8] Again, education about AIDS is far more likely to be required (by 30 states and the District of Columbia). Instruction about STDs and about abstinence is required by similar numbers of jurisdictions (20 states and the District of Columbia vs. 19 states and the District of Columbia). On the other hand, just seven states and the District of Columbia require instruction about pregnancy prevention. Only four states and the District of Columbia require both sex education in general and specific coverage of all four topics.

It is rare that a state will discourage or prohibit instruction in any of these subject areas; where such policies exist, they involve education about pregnancy prevention (Alabama discourages it and Utah prohibits it). No state actually forbids sex education, although nine take no position on the subject. In short, state education agencies generally favor the provision of sex education in local school districts, although they seem to place greater emphasis on the negative outcomes of sex (such as STDs and AIDS) and on abstinence than on the prevention of pregnancy.

## State Curricula

We received a wide variety of curriculum documents from the states, many of which addressed health education and included a family life or sex education "strand" alongside such subjects as communicable diseases, nutrition and consumer health. Some curricula set out suggested or required learning objectives for students (which could be as broad as "[comprehending] the importance of reproduction in the continuation of the family") or requirements for school accreditation. At the other end of the spectrum, a few states had produced lengthy, detailed documents containing lesson plans, suggested activities, sample handouts and resource information for teachers. Virtually all states suggested that sex education or AIDS education be integrated into health education or some other subject.

Curriculum content cannot, of course, automatically be equated with what is taught in the classroom. A curriculum is merely an outline of what may or should be taught. Moreover, classification of a state curriculum for the purposes of this study as a "sex education curriculum" or an "AIDS education curriculum" does not necessarily mean that a document with such a title is available. Since this subject matter is so often presented in the context of health education or some other course, states or districts might be baffled if someone were to request their "sex education curriculum."

Twenty-three states and the District of Columbia (as shown in Table 2) have developed a curriculum on sex education, and 27 plus the District of Columbia have produced one on AIDS education. Overall, 33 states and the District of Columbia have a curriculum on one topic or the other; a few others (California, Colorado, Maine and New Hampshire) that have not developed their own curricula recommend one or more, usually on AIDS, produced by a commercial publisher or by another state. When the latter are taken into account, 37 states and the District of Columbia offer some formal suggestion on curriculum to local districts. In addition, several of the remaining states* are developing a curriculum or plan to recommend one, so that almost all states can soon be expected to be providing some substantive guidance to school districts. In cases where states were able to estimate the percentage of districts using a state-developed curriculum, they reported that these were used by an average of 65–87 percent.

**Table 2. Coverage of sex education and AIDS education in state curricula, context in which each subject is covered and inclusion of selected topics, by state**

| State | Subject | | Context | | Topic area | | |
|---|---|---|---|---|---|---|---|
| | Sex ed | AIDS ed | Sex ed | AIDS ed | Abstinence | Preg prev | Condoms for AIDS prev. |
| **Total** | **24** | **28** | **na** | **na** | **23** | **13** | **19** |
| Alabama | X | X | H | ns | X | | X |
| Alaska | X | | H | | | X | |
| Arkansas | X* | X* | H | H | | X | |
| Connecticut | X | X | H | ns | X | X | X |
| Delaware | X* | X* | H | H | X | X† | X |
| D.C. | X* | X* | | H | X | | X |
| Georgia | X | | H | | | X† | |
| Hawaii | X | X | H | FL | X | | X |
| Indiana | X | | H | | | | |
| Iowa | X | | H | | | | |
| Kansas | X* | X* | ns | ns | | | |
| Maryland | | X | | H, HE, SC, SS | X | | |
| Massachusetts | | X | | H | | X | X |
| Michigan | | X | | ns | X | | X |
| Minnesota | X | X | H | H | | X | X |
| Missouri | X* | X* | H | H | X | | |
| Montana | X | | H | | | X | |
| Nebraska | | X | | ns | X | | X |
| Nevada | X* | X* | ns | ns | X | X | X |
| New Jersey | X | X | FL, H, SC | ns | X | X | X |
| New Mexico | | X | | ns | X | | X |
| New York | X | X | H | H | X | | X |
| North Carolina | X | X | H | H | X | | X |
| Ohio | | X | | H | X | | X |
| Oklahoma | | X | | ns | X | | X |
| Oregon | X* | X* | H | H | | X | |
| Rhode Island | | X | | H | X | | |
| South Dakota | | X | | ns | X | | |
| Tennessee | X | | FL | | X | | |
| Texas | X* | X* | H, HE, SS, SC | H, HE, SS, SC | X | X | |
| Vermont | | X | | H, HE, SS, SC | X | | X |
| Virginia | X* | X* | FL | FL | X | X | X |
| West Virginia | X* | X* | H | H | | X | |
| Wisconsin | X* | X* | H | H | | | X |

*Combined curricula. †Lists specific methods.

Notes: X=covers subject; H=health education; FL=family life education; SS=social studies; SC=science; HE=home economics; ns=not specified; na=not applicable. Seventeen states are not included because they have not developed curricula on these topics.

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*Arizona, Kentucky, Louisiana, North Dakota, South Carolina, Utah and Washington.

State curricula were reviewed to ascertain, among other things, the extent to which sex education and AIDS education are presented together or separately. The clearest indication of integration is when both subjects are covered in a single curriculum document; 10 states and the District of Columbia take this approach (see Table 2). Seven more states address both topics, but have separate curricula. The curricula of six states, on the other hand, address only sex education, while those of 10 cover AIDS education alone.

While most of the sex education curricula are 5–10 years old, all of the AIDS education documents, as one would expect, date from 1985 or later, and are far more detailed than the sex education curricula. Twenty-two states plus the District of Columbia have curricula that address the subject of abstinence, but, with the exception of Tennessee, they do so in the context of preventing AIDS rather than that of preventing unintended pregnancy (not shown). The fact that only one sex education curriculum mentions abstinence, while so many AIDS education documents do so, is not surprising, given that many sex education curricula also do not address sexual activity or birth control. Instead, these documents tend to cover the reproductive system, puberty, dating, marriage, pregnancy and the responsibilities of parenthood. The curricula of 15 states* and the District of Columbia suggest that abstinence be covered in grades 7–12; those of five states (Massachusetts, New Mexico, Rhode Island, South Dakota and Tennessee) recommend grades 9–12, and one (North Carolina) suggests grade seven. (Connecticut does not specify grade levels for instruction on abstinence.)

The AIDS education curricula from New York, North Carolina and Virginia place the greatest emphasis on abstinence, highlighting it as the only sure means of prevention while placing other preventive strategies in a negative light. The curricula of other states usually explain in a balanced way that while abstaining from intercourse is the most effective and the safest means to prevent infection, effective preventive measures also include using condoms and limiting sexual contact to a single, well-known partner.

The curricula of six states† cover condoms quite explicitly: Michigan's, for example, discusses where condoms can be purchased, and New Jersey's proposes an activity for teaching students how to use a condom. In contrast, condoms are treated relatively negatively in the curricula from Alabama, New York, North Carolina, Ohio and Oklahoma; those of Alabama and New York, for example, focus on the failure rate of condoms. The curricula of another six states‡ plus the District of Columbia simply mention condoms, but provide no specifics on how they are to be discussed. In 16 states§ and the District of Columbia, curricula suggest that students be given information about AIDS hot lines or testing centers where they can get help. Many of the AIDS curricula suggest that instruction be conducted in grades 7–12.** With two exceptions (those of Nebraska and Virginia), these curricula do not suggest that students be instructed about abstinence in earlier grades and about other preventive strategies later on.

Although the curricula of 13 states address pregnancy prevention, only those of Delaware and Georgia list specific methods of contraception and suggest that the risks and benefits of each be covered. More typically, a document outlines the expectation that students in grades 9–12 will "develop an understanding of the purpose of contraceptives in preparation for adult life."[10] Some states simply mention "family planning" or "prevention of pregnancy" as topics that are to be covered, with no further specifics. None of the sex education curricula suggest that information be provided on sources of contraceptive care, such as clinics or physicians. On the other hand, only one state (New York) has a curriculum that addresses birth control in a negative context, listing "freedom from the bother and dangers of the pill, IUD and other contraceptives" as one of the advantages of abstinence.[11]

As for the timing of instruction on pregnancy prevention, five states (Montana, Nevada, New Jersey, Texas and Virginia) suggest grades 7–12, another five (Alaska, Arkansas, Delaware, Georgia and West Virginia) recommend 9–12, two (Minnesota and Oregon) suggest grades eight and 11 and one (Connecticut) makes no suggestion. Since as a general rule the sex education curricula do not address abstinence, the documents do not show a progression over time from the coverage of abstinence to the coverage of birth control.

Overall, the sex education or AIDS education curricula of eight states and the District of Columbia†† stand out by virtue of their comprehensive coverage of the subject matter as well as the fact that they address, in a balanced way, both abstinence and strategies appropriate for students who are sexually active.

## Other State Activities

Besides setting policies and formulating curricula, states can support local programs in a number of ways. For example, 15 states‡‡ recommend or approve specific textbooks or instructional materials for local districts. States may also establish minimum standards for teachers and provide training. Half of the states (plus the District of Columbia) require teachers either to be certified or to have had training (or both) in order to teach sex education or AIDS education. Twenty states§§ and the District of Columbia demand certification in a specific field, usually health education or health and physical education, and Michigan, Ohio, Utah and the District of Columbia also require instructors to have taken a course in human sexuality in order to be certified. However, three states also permit teachers certified in home economics (Idaho, New Jersey and North Dakota) or science (Arkansas, New Jersey and North Dakota) to teach sex education, three mention biology and behavioral sciences (Idaho, Michigan and New Jersey) and one cites nursing, psychology and special education (New Jersey).

Nine states*† and the District of Columbia have a training requirement, although it more often applies to teachers of AIDS education than to those of sex education. The type of training that may be required varies from state to state, ranging from participation in regional workshops or conferences to the accumulation of 45 hours of training from a university or public health commission.

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*Alabama, Delaware, Hawaii, Maryland, Michigan, Missouri, Nebraska, Nevada, New Jersey, New York, Ohio, Oklahoma, Texas, Vermont and Virginia.

†Connecticut, Hawaii, Massachusetts, Michigan, New Jersey and Vermont.

‡Delaware, Minnesota, Nebraska, Nevada, Virginia and Wisconsin.

§These states are Hawaii, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New Mexico, New York, Oklahoma, Rhode Island, South Dakota, Texas, Vermont, Virginia and Wisconsin.

**Eight states (Hawaii, Michigan, Nevada, New Jersey, New York, Ohio, Oklahoma and Vermont) suggest grades 7–12; Massachusetts and Nebraska recommend grades 9–12; Minnesota grades 8 and 11; North Carolina, grade 7; and Virginia, grades 8 and 9.

††Curricula from Delaware, Hawaii, Virginia and the District of Columbia addressing both sex education and AIDS education, and AIDS education curricula from Massachusetts, Michigan, Minnesota, New Jersey and Vermont.

‡‡Arkansas, California, Hawaii, Idaho, Indiana, Maine, Montana, North Carolina, South Carolina, South Dakota, Tennessee, Texas, Utah, West Virginia and Wisconsin.

§§Arkansas, Delaware, Georgia, Hawaii, Idaho, Iowa, Michigan, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, Tennessee, Utah, West Virginia and Wisconsin.

*†Alabama, Hawaii, Louisiana, Maryland, Michigan, New York, South Dakota, Tennessee and Virginia.

Thirty-six of the 49 state education agencies (plus that of the District of Columbia) that responded to the question reported that they had conducted training programs for local school district personnel;[*] Arkansas and South Carolina said that they relied on the state health department to train educators. Five states (Florida, Indiana, Mississippi, Vermont and Virginia) are planning to offer some training in the future. As might be expected, all 36 states that conducted training covered AIDS education, but only 14 states[†] and the District of Columbia also provided training in the area of sex education. The number of persons that the states expected to have trained in the 1987–1988 school year varied widely, the average being 2,350; roughly two-thirds of the trainees are teachers, with the remainder including principals and administrators, nurses and counselors, local school board members and others.

In order to get an impression of how many states have a reasonably broad-based "program" on sex education, we constructed a measure that takes into account the existence of a curriculum (whether or not it was developed by the state), either a certification or a training requirement for teachers and some training conducted during the year. Although this is a crude measure because it fails to take into account such factors as the quality of the curriculum, the content of the training and the number of persons trained, it provides at least some indication of the degree of a state's commitment to these areas of instruction. The measure indicates that three states (New Jersey, New York and Wisconsin) plus the District of Columbia have what can be construed as a program on sex education and AIDS education, and 13 states[‡] have what can be considered an AIDS education program. No state has a program on sex education without a concomitant effort in AIDS education.

We also sought to determine the extent of the states' commitment to sex education and AIDS education by asking about their staffing patterns and expenditures. (These were the areas in which respondents had the most difficulty in separating out sex education from broader activities, usually those in health education. Moreover, they are the areas of the survey most likely to have changed with the infusion of public funds into AIDS education, so the figures should be viewed with caution.) Only Mississippi, North Dakota and Oklahoma reported that they had no personnel working at the state level on either sex education or AIDS education. Every state that had such personnel reported that someone was working on AIDS education, and 36[§] said that someone is working at least part-time on sex education. On average, there are slightly less than two (full-time equivalent) persons working on sex education and AIDS education for each state—a total of almost 90 such persons nationwide. This number varies widely from state to state, however, with Hawaii and New York reporting the largest numbers (21 and 14, respectively) and most states saying they have one full-time person or less. New York and Hawaii are somewhat special cases, however, inasmuch as New York has 10 persons in its regional technical assistance offices and Hawaii actually sends staff and consultants into the schools to implement the state's AIDS education program. Overwhelmingly, the states reported that their personnel have three functions—technical assistance, training and curriculum development.

Forty states[**] and the District of Columbia reported that they spent some money for AIDS education during the 1987–1988 school year, and 27 of these[††] (plus the District of Columbia) also expended funds on sex education. Nationwide, these expenditures totaled almost $6.3 million, with over 80 percent of them ($5.1 million) specifically for AIDS education. Some $535,000 was spent on combined sex education and AIDS education, and $648,500 was earmarked specifically for sex education. Presumably, the large proportion of funds devoted to AIDS education can be attributed to the recent infusion of public funds for programs to educate young people about the prevention of AIDS. On average, the states spent over $190,000 each in 1987–1988, with the individual amount ranging from less than $1,000 to over $1.8 million (in New York).

More states use their own funds than use federal funds for their activities, although overall, each source provides very similar dollar totals (48 percent of the money is federal, 51 percent state). As of mid-1988, federal funds generally came from the Centers for Disease Control and were allocated for AIDS education activities. Only seven states[‡‡] and the District of Columbia provided $100,000 or more in state money for sex education or AIDS education, with New York making by far the largest investment in state funds ($1.5 million). It is noteworthy that other states with a serious AIDS problem (such as California, Florida, Texas and New Jersey) did not report having spent any great amount of state money for AIDS education, at least not through the state education agency.

Another interesting finding is that only rarely do states make direct grants to local school districts for sex education and AIDS education. Just six states devote a total of $264,000 to such purposes; almost all of this total ($200,000) is allocated by Wisconsin for sex education grants, while the remainder is spent by the other five (Colorado, Kentucky, Maryland, Minnesota and Pennsylvania) on modest grants for AIDS education.

Because there is not always a consensus on the finer points of sex education (such as what the content of instruction should be, when it should be taught and which materials should be used), the survey asked whether the states have advisory boards on sex education. Two-thirds of the states

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[*] All but Alaska, Arizona, Arkansas, Florida, Illinois, Indiana, Kentucky, Mississippi, North Dakota, South Carolina, Vermont, Virginia and Wyoming; there was no response from South Dakota.

[†] These states are Colorado, Kansas, Maine, Massachusetts, Michigan, Missouri, Nebraska, Nevada, New Mexico, New Jersey, New York, Rhode Island, Utah and Wisconsin.

[‡] Alabama, Delaware, Georgia, Hawaii, Iowa, Maryland, Michigan, New Hampshire, New Mexico, North Carolina, Ohio, Rhode Island and West Virginia.

[§] Alabama, Alaska, Arizona, Arkansas, Colorado, Connecticut, Delaware, Hawaii, Idaho, Illinois, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin and Wyoming.

[**] All but Arizona, Arkansas, Georgia, Indiana, Iowa, Mississippi, New Hampshire, Oklahoma, South Carolina and Wyoming.

[††] Alaska, Colorado, Connecticut, Delaware, Hawaii, Illinois, Kansas, Maine, Massachusetts, Michigan, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Dakota, Ohio, Rhode Island, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia and Wisconsin.

[‡‡] California, Hawaii, Minnesota, New York, Utah, Virginia and Wisconsin.

**Table 3. Percentage distribution of large school districts, by their position on instruction in local schools about sex education, according to selected topics**

| Position | Topics | | | | |
|---|---|---|---|---|---|
| | Sex education | Abstinence | Pregnancy prevention | AIDS | Other STDs |
| Required | 68 | 43 | 40 | 80 | 69 |
| Encouraged | 19 | 48 | 41 | 16 | 24 |
| No position | 11 | 9 | 16 | 4 | 6 |
| Discouraged | 1 | 0 | 1 | 0 | 1 |
| Prohibited | 1 | 1 | 3 | 1 | 1 |
| Total | 100 | 100 | 100 | 100 | 100 |

have such a board: Nineteen states* and the District of Columbia have only a board devoted to AIDS education, while three states (Illinois, Maine and Rhode Island) have only a board devoted to sex education; in 10 cases,† the state board has jurisdiction over both sex education and AIDS education. Four states (Kentucky, Michigan, South Carolina and Wisconsin) have two separate boards, with Michigan and South Carolina having both a joint board and a separate AIDS board. The membership of these boards most often includes health department representatives, school administrators and teachers, parents and physicians or medical personnel.

### District Positions

The large school districts offer strong support for sex education and for the four topics related to sex education, as evidenced by the number that take positions encouraging or requiring instruction in local schools. As can be seen in Table 3, 87 percent support sex education in general, and even larger proportions specifically support AIDS education (96 percent) and instruction about other STDs (93 percent) and abstinence (91 percent). Although support for education about pregnancy prevention lags behind (81 percent of the districts), it is high nonetheless; however, this percentage may be overstated, since some districts that support instruction on abstinence may also have reported that they encourage or require education about pregnancy prevention. More than two-thirds (68 percent) of the districts actually require instruction in sex education, while 80 percent require AIDS education and 69 percent education about other STDs. Interestingly, the districts are about equally likely to require education about abstinence (43 percent) and pregnancy prevention (40 percent). Almost a third of the districts (31 percent) require both sex education in general and coverage of all four topic areas (not shown).

Very few large school districts said that they discourage or prohibit sex education (two percent); fewer than one percent deter or forbid instruction on AIDS, other STDs and abstinence, and four percent of the responding districts discourage or prohibit instruction about pregnancy prevention. Overall, then, districts give somewhat greater emphasis to education about AIDS and other STDs than to sex education more broadly. Abstinence and pregnancy prevention are lower on their list of priorities, although support for instruction on each topic is high, particularly for abstinence.

Analysis across the two surveys shows no relationship between state and district policies on sex education. In other words, a district is neither more nor less likely to adopt a specific policy on sex education depending on the state's policy. The same is true of the four topics within sex education.

### District Curricula

Eighty-seven percent of the responding districts have a curriculum on sex education or AIDS education, and many of those that do not are in the process of developing one. Half of the districts (47 percent) have curricula that cover both areas, while 41 percent have a separate AIDS curriculum and 34 percent a separate sex education curriculum. The great majority of districts with a curriculum developed their own (87 percent), while 17 percent reported that they use a curriculum from their state education agency and five percent or less use commercially available documents. (All of the above percentages do not add to 100 because some states use more than one curriculum.) Over 80 percent of the districts with a sex education curriculum and over 90 percent of those with an AIDS education curriculum reported that it is mandatory for schools in that district; where use of the provided curriculum is not mandatory, the districts said that it is used by about 60 percent of schools nevertheless.

The curricula of the large school districts were reviewed less rigorously than were those of the states, in that instead of analyzing each curriculum document, we simply asked if a few very specific topics were included in the districts' curricula, and if so, in which grades. As can be seen in Table 4, districts place a high priority on efforts to discourage sexual activity among adolescents, particularly the younger ones. Virtually all districts with a sex education or AIDS curriculum (96 percent) cover the negative consequences for teenagers of sexual intercourse; over 90 percent of the district curricula emphasize that abstinence is the best alternative for preventing pregnancy and STDs. Both of these topics receive the greatest coverage in grades seven and 10: More than 70 percent of the district curricula address them in these grades. Coverage is relatively stable throughout grades 7–10, but drops off sharply to about 50 percent in grades 11 and 12. The same grade pattern holds true for teaching that abstinence is the only alternative for preventing pregnancy and STDs, but only nine percent of districts with a curriculum include this topic.

As might be expected, fewer curricula address contraception. Even so, however, a remarkably high proportion (74 percent) include an explanation of how each method is used, and 41 percent provide information about specific clinics or doctors students can go to for birth control. Such coverage is most likely in grades nine and 10; as with abstinence, discussion of these topics falls sharply in grades 11 and 12. However, coverage of birth control topics is relatively low: In each grade, only 33–53 percent of school districts with a curriculum address how methods are used, and well under 30 percent cover sources of contraceptive care.

The vast majority of school district curricula discuss condoms as a means of preventing AIDS (86 percent) and other STDs (80 percent), although such topics are not as prevalent as abstinence. Both topics are most likely to be addressed in grade 10; once again, coverage drops in grades 11 and 12.

In general, then, districts opt for an emphasis on abstinence-related topics in grades seven and eight; from grade nine onwards, while continuing to emphasize instruction on abstinence, they also stress the use of condoms as a means of preventing AIDS.

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*Arizona, Arkansas, California, Colorado, Connecticut, Florida, Hawaii, Louisiana, Maryland, Massachusetts, Minnesota, New Jersey, New York, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota and Washington.

†Delaware, Michigan, Missouri, Nebraska, Nevada, New Hampshire, North Carolina, South Carolina, Utah and Vermont.

Overall, what is clear from an examination of the curricula used by large school districts is that, as with their policies on sex education and AIDS education, they tend to place considerable emphasis on abstinence and on the outcomes of sex in terms of disease. Nevertheless, a majority of districts are in fact setting a tone in their curricula that, while stressing the desirability of abstinence, recognizes that millions of adolescents are sexually active and need to know about the prevention of pregnancy and STDs, including AIDS.

### Other District Activities

Districts often seek to establish standards for teachers and help local schools through various program activities. For example, 72 percent of the districts recommend or approve textbooks or instructional materials for local schools. Fifty-six percent require a teacher of sex education or AIDS education to be certified, usually in health education (86 percent) but sometimes in science (41 percent), physical education (26 percent), home economics (21 percent), biology (12 percent) or as a school nurse (11 percent).

Seventy-five percent of districts have a training requirement, but this applies more often to teachers of AIDS education (69 percent) than to those teaching sex education (61 percent). The required training averages just over two days or six workshops or sessions, and most often is provided by a health department or by the district itself, although at times it is conducted by a college or university, the state education agency, a consultant or medical personnel. Training usually covers information on the subject matter, but sometimes focuses on the curriculum; rarely does it address materials or teaching techniques.

Eighty-seven percent of the districts provide training for their personnel, and this training is thought not to include that provided by the states, although the states may assist in some way. More than half of the districts (53 percent) conduct combined training on sex education and AIDS education, 65 percent provide just AIDS education training and a surprisingly large 21 percent train personnel specifically on sex education. (The percentages add to more than 100 percent because a number of districts conduct several kinds of training.) The average district trains over 1,100 persons during the year, most of them teachers (69 percent). Indeed, 14 districts reported having trained all of their teachers.

As we did in the state analysis, we constructed a measure to determine how many districts have a reasonably broad-based "program," taking into account a curriculum, certification or training requirement for teachers, and the provision of some training in the course of the year. Forty-two percent were found to have a program that addresses both topics, four percent have a sex education program without a concomitant effort in AIDS education and 25 percent have only an AIDS education program. Thus, while programs that address both sex education and AIDS education are not very widespread, they are by no means exceptional. On the other hand, about two-thirds of the districts are making a real program effort in the area of AIDS education.

Districts are not significantly more or less likely to have a sex education program after we take into account whether the state has a sex education policy or program. With regard to AIDS education, districts are neither more nor less likely to have an AIDS education program depending on the state's policy on AIDS education. They are somewhat more likely, however, to have an AIDS education program if the state has one (74 percent) than if the state does not (59 percent), although the difference is only marginally statistically significant (p=0.10).

Sixty-eight percent of the large school districts said that they had received some help from their state education agency in the course of that academic year. Eighty percent said they had received help with materials and resources; districts also reported that they had often received help from the state with curriculum development (67 percent), policy development (58 percent) and training (50 percent). Far fewer districts had received assistance on how to deal with controversy (32 percent), and just 23 percent reported having received a grant of money. Clearly, then, districts are looking to their state agencies for help and are receiving it. The states may also be helping in subtle ways that were not captured on the survey of state agencies.

Like the state agencies, the school districts often establish advisory boards on sex education and AIDS education; 79 percent have such a body. More than half of the districts (52 percent) have a board that deals with both sex education and AIDS education, 23 percent have one on AIDS education only and 17 percent have one on sex education alone. (Some districts have more than one board.) The types of persons sitting on these boards are very much the same as those at the state level—principals or administrators, parents, physicians or other medical personnel, teachers and others.

**Table 4. Among large school districts with a sex education or AIDS education curriculum, percentage that cover selected topics, by grade**

| Topic | % covering topic | Grade | | | | | |
|---|---|---|---|---|---|---|---|
| | | 7 | 8 | 9 | 10 | 11 | 12 |
| Negative consequences of sexual intercourse for teenagers | 96 | 75 | 70 | 66 | 74 | 51 | 48 |
| Abstinence as the best alternative for preventing pregnancy and STDs | 91 | 77 | 69 | 65 | 71 | 51 | 48 |
| Abstinence as the only alternative for preventing pregnancy and STDs | 9 | 7 | 6 | 4 | 7 | 2 | 2 |
| Use of condoms as a way of preventing AIDS | 86 | 62 | 63 | 64 | 73 | 51 | 50 |
| Use of condoms as a way of preventing other STDs | 80 | 57 | 54 | 57 | 63 | 46 | 44 |
| Explanation of how each birth control method is used | 74 | 35 | 35 | 46 | 53 | 34 | 33 |
| Information about specific clinics or MDs to which students can go for birth control | 41 | 23 | 21 | 25 | 28 | 20 | 19 |

### Conclusions

Support for sex education is strong: Not only does a large majority of the American public support it, but so do most state education agencies and large school districts. Indeed, besides the District of Columbia, the number of states that actually require sex education has increased dramatically, from three in 1980 to 17 in 1988.

The largest school districts in the country are clearly supportive of education to help young people avoid pregnancy and contraction of STDs, including AIDS. They appear to view abstinence from sexual relations as the primary strategy to achieve these goals, reinforcing this message through their curricula. Nevertheless, most school districts also cover birth control methods to prevent pregnancy and condoms as a means to prevent transmission of STDs and AIDS, and they often do so as early as seventh grade. Even so, they place greater emphasis on the means to avoid STDs and AIDS than on those to avoid pregnancy. However, it is the exceptional district that teaches abstinence as the only way to prevent pregnancy and STD transmission.

The large school districts are bolder than the states in the subject matter they are willing to cover. The states are less likely than the districts to support sex education and substantially less likely to support education about pregnancy prevention. When it comes to their curricula, the states also provide little in the way of specifics on the prevention of pregnancy, focusing much more on AIDS prevention, particularly through abstinence.

The districts are also more likely than the states to provide various kinds of support to local educators, through curricula and special training. This may be due, at least in part, to the state agencies' modest budgets. However, only a minority of states and districts have reasonably broad-based programs to help local educators.

The fact that there is no clear relationship between the policies and programs of the states and those of the districts is hardly surprising. In the absence of more specific guidance from the states on what districts should be doing or on what students should learn, parallels between the states and districts can hardly be expected. Furthermore, it is clear that districts are closer than states to their students' needs, so they are more likely than the states to be the trailblazers. Finally, the sheer size of the districts in this study is such that one might expect them to be "ahead" of their state agency, which must address the needs of all districts in that state.

Both the states and the districts place less emphasis on pregnancy prevention than on disease prevention—unsurprising, considering that the system seems now to be largely driven by the AIDS crisis. Most state personnel and expenditures are devoted to AIDS education rather than to sex education, and both the states and the districts concentrate most of their program activities on AIDS education. This state of affairs is to be expected—given both the seriousness of the disease and the recency of its appearance.

However, in the current state of affairs, sex education is often being left behind. For example, while states are developing new and often detailed AIDS education curricula, the old sex education curricula are often not being updated. They still focus largely on the reproductive system, puberty, dating, marriage, pregnancy and the responsibilities of parenthood, rather than on more "relevant" topics like sexual activity and pregnancy prevention. Moreover, sex education and AIDS education often seem to be viewed by the education system as unrelated, with separate curricula, separate training programs and different standards for teachers.

In short, it seems that sex education has benefited to some extent from the crisis orientation of our society, inasmuch as concern about AIDS has led to increasing numbers of supportive policies. On the other hand, sex education has also suffered from this crisis-driven approach, since states and districts clearly are focusing primarily on AIDS. Thoughtful consideration of what the appropriate content of sex education may be in an era when sexual activity, pregnancy and STDs are common among adolescents would be welcome.

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"Sex Education in the Schools . . ."

*(Continued from page 52)*

and STDs in the attention it receives in the classroom—although pregnancy arguably represents a more serious problem for adolescents and society than some of the more common STDs, which can be treated relatively easily.

The AGI studies point to the need for action at many levels. Teachers on the front line of sex education need help, and for a variety of reasons they are not always getting it. State and school district sex education policies are often vague or overly general—and sometimes are even nonexistent. Theoretically, they are designed this way to allow local school personnel a maximum of flexibility in deciding what is needed by and appropriate for their communities, but such policies provide little in the way of support, guidance or comfort. A primary task for state-level policymakers is the development of unambiguous policies on sex education and the establishment of detailed curricula.

The finding that some states have outdated sex education curricula indicates that for effective programming, curricula should be reviewed with some regularity. Such reviews should also consider whether topics sometimes taught separately—as AIDS often is—should be integrated into the overall sex education program, and whether some topics should be taught earlier than they presently are. Above all, frequent curricula reviews would ensure that the information conveyed to students is accurate, relevant and timely.

Moreover, teachers must have appropriate materials to use in providing sex education. They must not be forced—as the studies show they often are—to develop their own materials because of the limited usefulness or availability of the tools that exist. Finally, teachers need the demonstrated support not only of their school administrations but of parents and the community as well. Public opinion polls have made clear that the support is there, but it appears to be passive rather than active and visible. And it is active encouragement that is required if secondary schools are to meet the sex education needs of their students now and in the future.

# What Public School Teachers Teach About Preventing Pregnancy, AIDS And Sexually Transmitted Diseases

*By Jacqueline Darroch Forrest and Jane Silverman*

## Summary

Ninety-three percent of public school teachers in five specialties—biology, health education, home economics, physical education and school nursing—who teach grades 7–12 report that their schools offer sex education or AIDS education in some form. Almost all the teachers believe that a wide range of topics related to the prevention of pregnancy, AIDS and other sexually transmitted diseases (STDs) should be taught in the public schools, and most believe these topics should be covered by grades 7–8 at the latest.

In practice, however, sex education tends not to occur until the ninth or 10th grades. Moreover, there is often a gap between what teachers think should be taught and what actually is taught. For example, virtually all the teachers say that school sex education should cover sexual decision-making, abstinence and birth control methods, but only 82–84 percent of the teachers are in schools that provide instruction in those topics. The largest gap occurs in connection with sources of birth control methods: Ninety-seven percent of teachers say that sex education classes should address where students can go to obtain a method, but only 48 percent are in schools where this is done.

Forty-five percent of teachers in the five specialties currently provide sex education in some form. The messages they most want to give to their students are responsibility regarding sexual relationships and parenthood, the importance of abstinence and ways of resisting pressures to become sexually active, and information about AIDS and other STDs. Among those who currently provide sex education, 90–96 percent cover AIDS, other STDs and sexual decision-making, and 83–89 percent cover abstinence, birth control methods and factual aspects of abortion. Much smaller proportions (64–77 percent) deal with homosexuality, "safer sex" practices and ethical issues surrounding abortion, and only 52 percent provide information about sources of birth control.

Sex education teachers regard pressure from parents, the community or the school administration as the major problem they face in providing sex education. Other important problems are the lack of appropriate materials on the subject, and students' reactions or lack of interest.

**The lack of sufficient teaching materials means that many sex education instructors must develop their own. Half or more develop at least some of the materials they use to teach about abstinence, birth control, AIDS and other STDs.**

## Background and Methodology

Surveys of American teenagers in the early 1980s showed that the majority received some sex education before graduating from high school.[1] However, surveys of those teaching high school sex education courses in 1978[2] and of superintendents of large city school districts in 1982[3] indicated that the components of sex education varied widely across the country.

A continuing concern over adolescent sexual behavior, pregnancy and childbearing has led to increased emphasis on sex education in the last decade.[4] In addition, the emergence of AIDS and the recognition that it can be transmitted through heterosexual intercourse[5] have undoubtedly changed both the frequency with which students receive sex education and the content of that teaching. Although the policies and programs of states and school districts are important guides, they provide little precise information about what is taught in the classroom. Without such information, however, the design, implementation and evaluation of sex education initiatives are seriously hampered.

The study reported here addresses the frequency of sex education in grades 7–12 and some of the topics covered. It also explores institutional and other obstacles that may impede such instruction. The study places special emphasis on the topics of pregnancy prevention and the prevention of sexually transmitted diseases, because they have direct relevance to the incidence of adolescent pregnancy and to levels of infection among teenagers. While AIDS is in part a sexually transmitted disease, the study focuses on it separately in order to obtain a clearer picture of what the schools are doing. Since the study provides national statistics on these issues for the first time, its purpose is primarily descriptive.

Sex education is not always referred to by that name, and it may be integrated into other curricula rather than be taught as a separate course. In this study, sex education is defined broadly, as any instruction that includes some discussion of human sexual development, the process of reproduction or the exploration of interpersonal relationships and sexual behavior. Since AIDS education usually falls within these bounds, and because it is sel-

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**Table 1. Number of public school teachers in one or more of five specialties, grades 7–12; number surveyed; number of eligible respondents; response rate; and percentage distribution by involvement in sex education; all according to specialty**

| Specialty | U.S. total | No. surveyed | No. respondents | % responding* | Involvement in sex education | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Teach now | Taught in past | Expect to teach | None | Total |
| **Total** | **111,500** | **9,800** | **4,241** | **45** | **45** | **18** | **14** | **24** | **100** |
| Health education | 17,700 | 1,060 | 411 | 40 | 74 | 12 | 7 | 7 | 100 |
| Physical education | 50,200 | 3,360 | 1,263 | 39 | 30 | 21 | 17 | 32 | 100 |
| Home economics | 23,500 | 2,335 | 1,043 | 46 | 49 | 17 | 13 | 20 | 100 |
| Biology | 14,600 | 1,135 | 444 | 40 | 57 | 14 | 12 | 17 | 100 |
| School nursing | 5,500 | 1,910 | 1,080 | 61 | 30 | 22 | 13 | 34 | 100 |

*Of the teachers surveyed, 361 were found to be ineligible (24 biology teachers, 38 health educators, 73 home economics teachers, 101 physical education instructors, and 125 nurses); these were subtracted from the total numbers surveyed before calculating the response rates.

dom taught exclusively, it is considered in this article to be part of sex education unless otherwise stated.

Information about the provision of sex education was gathered through a survey of public school teachers in grades 7–12. Teachers were chosen because they can probably provide more accurate information about classroom instruction than can school principals or district superintendents; however, this approach is still likely to be less accurate than actually observing instruction. The teachers who were surveyed were drawn from the five specialty areas that previous literature has shown to include most sex education teachers: biology, health education, home economics, school nursing and physical education.[6]

The names and addresses of the teachers surveyed were purchased from a commercial firm (Market Data Retrieval) that, each fall, obtains the names of all teachers in each school throughout the United States; it updates the list continually during the year. A systematic random sample was generated within each specialty from among teachers who, in late fall 1987, were in schools that covered one or more of grades 7–12. Teachers were chosen using a sampling fraction proportional to the likelihood that teachers in their specialty were providing sex education, as estimated from earlier studies.[7] As shown in Table 1, the original sample included 9,800 teachers, ranging from 1,060 in health education to 3,360 in physical education. In March 1988, an introductory letter was mailed to each of the sampled teachers at their school address to inform them of the study and of their selection for inclusion. The questionnaire and one follow-up letter were then sent to all 9,800 teachers in April; nonrespondents were sent a second copy of the questionnaire in May.

Only the addressee was accepted as a respondent to the questionnaire; no substitutions were allowed. If the questionnaire recipient was not the person named on the address label, he or she was asked to forward the questionnaire to the correct person, if possible, or to return it unanswered. Four percent of those surveyed (361 teachers) were found to be ineligible. Most of these did not teach within the designated specialty or were no longer teaching, and a few had changed schools.

A total of 4,241 eligible teachers responded to the survey, as shown in Table 1, yielding a response rate of 45 percent. The response rate differed by specialty and was highest among the nurses. Respondents were similar to nonrespondents in metropolitan status, although teachers from schools with 501–1,000 students were slightly more likely than those from schools with larger or smaller enrollments to have responded to the survey (not shown). Teachers from the North Central region of the country had a slightly higher response rate and those from the South had a slightly lower response rate than those from other regions. The size of the school and region of the country were found not to be significantly related to responses on a number of variables that were investigated,* suggesting that there is little bias in the responses to the questionnaire other than that of differences by specialty. However, there is no way to test this conclusion: There are no studies against which to judge whether respondents differed from nonrespondents on other variables, such as the likelihood that they supported or provided sex education.

Because the sampling fractions and response rates were different for each specialty, the data presented in this article are weighted by specialty.† The weighting yields estimates of teachers in the five specialties that correspond to their numbers in the nation as a whole during the 1987–1988 school year.

The survey questionnaire was developed through personal consultation with sex educators, researchers and education specialists. Preliminary work also included four focus group discussions with sex educators from public secondary schools in the Northeast and a pilot survey of 200 randomly sampled public school teachers, 40 from each of the five specialties covered in the survey. All survey recipients were asked questions about themselves and their schools, and about their views as to whether sex education should be taught and what topics should be covered at what grade levels. Respondents currently providing sex education were asked more detailed questions.

## Characteristics of the Teachers

Nationwide, an estimated 50,000 public school teachers were providing sex education in grades 7–12 in 1987–1988.‡ As seen in Table 1, they represent 45 percent of the 111,500 instructors in the five specialties that were surveyed. Teachers of health education are the most likely to provide sex education, and physical education teachers and school nurses are the least likely. However, there are more than twice as many physical education teachers as teachers of health education or any of the other specialties, so they account for the largest proportion, 31 percent (not shown), of those teaching sex education. Health education and home economics contribute 26 percent and 23 percent, respectively, of sex educators; 17 percent come from biology and three percent are school nurses.

The majority of the sex education teachers, 61 percent, are women. Among health and physical education instructors, men and women are equally likely to teach sex education, but among biology teachers, women are significantly more likely to teach it; most of the home economics teachers and school nurses are women. Most of the sex education instructors are experienced teachers: Forty-nine percent are aged 40 or older; half have been teaching in the schools for 15 or more years and teaching sex education for at least eight years. For most, sex education represents a small proportion of their teaching time. Sixty percent say that it accounts for 10 percent or less of their total teaching time, and only two percent report that it takes up more than half their teaching time.

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*Here and subsequently, when significant results are cited, $p<0.05$.

†Estimates in this article that are based on 785–1,536 respondents have 95 percent confidence intervals of plus or minus three percentage points or less; confidence intervals for estimates based on 1,537–4,241 respondents are plus or minus two percentage points or less.

‡Six percent of those classified in this study as sex education teachers teach only AIDS education.

The data in Table 1 indicate that 77 percent of teachers in the specialties covered by this study currently teach sex education, have taught it in the past or expect to do so in the future. The proportions range from 65 percent of school nurses to 93 percent of health instructors. These figures suggest that sex education should be included in the standard training received by teachers in these specialties. Eighty-nine percent of the sex educators have undergone training that specifically prepared them for teaching the topic: Seventy-eight percent have had undergraduate training, 53 percent have had graduate training and 86 percent have received training in workshops or seminars outside their formal academic course work (not shown). Their primary identity is as a teacher of a subject other than sex education, however; almost none are certified as sex educators by any professional organizations, such as the American Association of Sex Educators, Counselors, and Therapists (AASECT) and the National Council on Family Relations (NCFR). Most continue to update their knowledge and skills. Within the past year, 72 percent had attended a workshop, conference or seminar designed to help them in their teaching of sex education.

Whether or not they teach sex education, all but two percent of the survey respondents say that the provision of sex education is an appropriate activity for the schools. Indeed, nine in 10 believe that students who receive sex education are more likely to use birth control if they have sexual intercourse. Virtually all teachers report that school sex education programs should teach students how to examine and develop their own values about sexual behavior, but two-thirds maintain that the programs should try to teach students moral values with respect to sexual behavior. About three-quarters of the teachers believe that students should be taught not to have sex, but nearly all maintain that students should be taught to protect themselves and their partners against pregnancy and infection if they do have sex.

Almost all teachers believe that a wide range of topics related to the prevention of pregnancy and infection should be covered in sex education, and most say they should be included by grades 7–8 at the latest. The teachers were asked their personal opinions about the lowest grade at which certain topics should be included in a sex education class: K–4, 5, 6, 7, 8, 9, 10, 11, 12 or never. At least three-quarters of the teachers believe that by the end of the seventh grade, students should be taught about transmission of the AIDS virus, STDs, sexual decision-making and abstinence. Smaller proportions say that the implications of teenage parenthood, birth control methods and homosexuality ought to be covered by that point (60 percent, 55 percent and 52 percent of teachers, respectively). By the end of the eighth grade, according to a majority of teachers, students also should be taught about sources of birth control methods (66 percent), "safer sex" practices (65 percent), factual information about abortion (64 percent) and ethical issues surrounding abortion (56 percent). At least 79 percent would include all of these topics by the end of the ninth grade (when most students are age 15). Relatively small proportions of teachers would exclude any of the topics completely; homosexuality and abortion ethics are the topics most often cited (by 6–8 percent of teachers).

## Extent and Content of Sex Education

Almost all teachers, 93 percent, report that sex education or AIDS education is offered in their school at one or more grade levels—77 percent report that both sex education and AIDS education are provided; eight percent, that sex education but no AIDS education is offered; and eight percent, that only AIDS education is offered.*

The 85 percent of respondents who report that their school offers sex education note that it is not offered at every grade level. It is most likely to be taught in the ninth and 10th grades: Thirty-five percent each say that sex education is provided in grades seven and eight; 44 percent and 46 percent, in grades nine and 10; and 34 percent and 33 percent, in grades 11 and 12.†

Sex education is almost always offered as part of another subject, usually health education, and it is often taught in more than one subject. Only 10 percent of the respondents whose schools provide sex education say that it is ever offered as a separate course. On average, sex education is taught in 1.8 different courses. Eighty-one percent of teachers report that the sex education in their school is part of health instruction; 40 percent, that it is part of home economics; 38 percent, biology or another science class; 11 percent, a physical education course; and five percent, some other course.

Information on AIDS is sometimes taught separately from sex education, possibly because of differences in the content or focus of instruction and in the departments or teachers responsible for the material. Thirty-seven percent of respondents in schools with sex education and AIDS education say that AIDS material is taught separately some or all of the time (20 percent and 17 percent, respectively). It is usually offered as part of health classes or in the health education department (68 percent say this).

Schools have initiated instruction related to AIDS quite rapidly. Nineteen percent of the respondents say that AIDS education was offered in their school even before the Surgeon General issued his 1986 report on the topic. Thirty-six percent say it began in the 1986–1987 school year and 30 percent, in the 1987–1988 school year. The more recently AIDS education was started, the more likely that it is taught separately from the rest of sex education.

Respondents who were currently teaching sex education or AIDS education (hereinafter called sex educators) were asked to list and rank "the three most important messages or pieces of information that you want to get across to the students. . . ." Three topics are each named by more than a third of the teachers as one of their most important messages—exercising responsibility regarding sexual relationships and parenthood (48 percent), knowing the importance of abstinence and how to resist pressures to become sexually active (37 percent), and having information about AIDS and other STDs (35 percent). About 25 percent cite abstinence as the most important message they have for their students, 21 percent cite responsibility, and 12 percent name AIDS- and STD-related information. Only a quarter of the teachers list information about contraceptives as

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*Whether a school has sex education or AIDS education appears to be determined primarily by local variables rather than by formal state or district policies. Regression analysis explained only four percent of the variance in whether sex education is taught and one percent of the variance in AIDS education. The independent variables included state and district policies on sex and AIDS education, the existence of state or district sex education and AIDS programs (see article by A. M. Kenney, S. Guardado and L. Brown on p. 56 of this issue), and a range of school characteristics.

†While these figures are the percentages of teachers in the five specialties surveyed who are in schools where sex education is offered, they can also be viewed as estimates of the percentages of public school students enrolled in schools where sex education is taught. Such estimates would assume that the number of teachers in these specialties in a school is an accurate reflection of the number of students in that school. However, because sex education instruction is not always mandatory, using these figures as approximations of the proportion of students actually receiving sex education in each grade would probably result in overestimates.

**Table 2. Percentage of teachers of sex education in grades 7–12 who cover specific topics, by topic and grade (N=1,658–1,714*)**

| Topic | Total | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|
| How AIDS is transmitted | 96 | 95 | 95 | 98 | 96 | 96 | 96 |
| Sexually transmitted diseases | 95 | 94 | 94 | 97 | 96 | 96 | 96 |
| Sexual decision-making | 90 | 88 | 90 | 92 | 89 | 91 | 91 |
| Abstinence from intercourse | 89 | 87 | 91 | 93 | 90 | 92 | 92 |
| Birth control methods | 88 | 83 | 83 | 92 | 90 | 91 | 91 |
| Abortion, factual information | 83 | 78 | 78 | 85 | 86 | 87 | 87 |
| Abortion, ethical issues | 77 | 67 | 69 | 81 | 79 | 83 | 83 |
| Homosexuality | 69 | 67 | 64 | 72 | 71 | 72 | 72 |
| "Safer sex" practices | 64 | 63 | 63 | 69 | 65 | 68 | 67 |
| Birth control sources | 52 | 41 | 50 | 57 | 55 | 59 | 60 |

*In this and subsequent tables, when ranges are given, they represent minimum and maximum Ns for the table (the Ns differ for each topic, since not all respondents answered questions for all of the topics).

**Table 3. Average number of hours of sex education provided, and average number of hours devoted to birth control methods and STDs, by grade (N=353–802)**

| Grade | Total | Birth control | STDs |
|---|---|---|---|
| **7–12** | **38.7** | **5.0** | **5.9** |
| 7 | 11.7 | 1.0 | 1.7 |
| 8 | 13.2 | 1.3 | 2.1 |
| 9 | 16.2 | 2.4 | 2.6 |
| 10 | 16.8 | 2.3 | 2.7 |
| 11 | 17.7 | 2.5 | 2.5 |
| 12 | 18.3 | 2.7 | 2.5 |

among their most important messages, and only five percent say that such information is their most important message.

The sex education instructors were asked detailed questions about what they teach regarding prevention of pregnancy and STDs, including AIDS. In each grade they teach, almost all sex education teachers cover how AIDS and other STDs are transmitted, as Table 2 shows. About nine in 10 talk about sexual decision-making, abstinence and birth control methods. There is little difference by grade level in whether teachers cover decision-making and abstinence, but they are less likely to talk about birth control methods in the earlier grades than they are in the later grades. Fewer sex education teachers cover factual information about abortion (83 percent) and ethical issues related to abortion (77 percent), with fairly sharp differences between grades 7–8 and grades 9–12. The teachers are more likely to cover abortion, however, than they are to discuss homosexuality (69 percent do so) and "safer sex" practices (64 percent). But when these two topics are covered, there are only slight differences by grade level. The topic least likely to be included in sex education is where to go for birth control methods; only 52 percent of sex education teachers cover this information. The topic also shows the widest grade-level differences: The proportion rises from 41 percent of teachers in the seventh grade to 60 percent of those in the 12th.

Ninety-four percent of sex educators report classroom discussions of birth control methods for pregnancy prevention. This proportion is higher than the 88 percent shown in Table 2 who say they cover birth control methods, primarily because it includes teachers who cover the topic only by answering questions from their students: Seventy percent of sex education teachers say that teaching about birth control methods is part of their curriculum, and 24 percent say methods are not part of the curriculum but are discussed if a student asks a question about the topic. Among the six percent who say they do not discuss methods at all in class, even if a student asks a question about them, a third will answer questions about birth control methods on a one-to-one basis after class.

Those teaching sex education in the higher grades are more likely than those in the lower grades to have birth control methods as part of their curriculum (74 percent of the 12th grade sex education teachers, compared with 36 percent of those teaching the seventh grade). They are also less likely to cover it only in response to a student's question in class or only on a one-to-one basis after class (24 percent of 12th grade and 57 percent of seventh grade teachers). When birth control methods are in a sex education curriculum, they appear to be taught in addition to abstinence rather than instead of it: Teachers are more likely to teach about abstinence if methods are in their curriculum (97 percent) than if methods are not in their curriculum (76 percent).

Twenty-eight percent of sex education teachers cover all the topics listed in Table 2; another 16 percent address all but where to go for birth control methods, and five percent cover all but "safer sex" practices. Only one percent include none of the topics in their instruction, and very few cover only one.

Figure 1 shows the proportion of all respondents who say that specific topics should be taught by the end of the seventh grade as opposed to later, and the proportion who are actually in schools where the topics are taught at those grade levels.* The comparisons in the figure reveal that each topic is not as likely to be taught as teachers think it should be. The gap between what teachers think should be taught and what is taught is greatest for birth control sources. Whereas 97 percent of all teachers say that where to go to obtain a method should be covered in sex education instruction, only 48 percent are in schools where such information is covered. "Safer sex" practices and homosexuality are the next most frequently omitted topics, but both are taught in at least 60 percent of the schools.

All the topics are not only less likely to be covered than schoolteachers think they should be, but are also not covered as early as teachers suggest. For example, about 75 percent of teachers think that sexually transmitted diseases and abstinence should be covered in grade seven or earlier, but only 34–37 percent of teachers are in schools where the subject is taught in the seventh grade. It is unlikely that much of this difference is due to a large proportion of students' being taught these subjects before the seventh grade. Rather, a real gap undoubtedly exists between what the teachers think needs to be done and what is actually occurring.

Sex education teachers have relatively little time to teach the material. The amount of time devoted to sex education when it is taught averages 11.7 hours in grade seven and increases to 18.3 hours in grade 12, as shown in Table 3. The amount of time devoted to teaching about birth control methods, not including abstinence, also rises with the grade level, from an average of one hour in seventh grade sex education to 2.7 hours in the 12th grade. Through grade 10, slightly more time is given to teaching about STDs—for example, 1.7 hours in the seventh grade and 2.7 hours in the 10th grade. Applying the grade-specific averages to the proportion of respondents noted previously who report that sex education is offered in each grade, and inflating the result to reflect the additional eight percent of teachers providing only AIDS education, yields a rough estimate that an average of 38.7 hours of sex education are offered in U.S. public schools from grades seven through 12. Of this time, an average of 5.0 hours (13 percent of total sex education time) are spent covering birth control, and 5.9 hours (15 percent) are devoted to covering STDs. These overall averages include teachers in schools where there is no sex or AIDS education. If only schools that offer sex or AIDS education are included, the average number of total hours is 41.7, with 5.4 spent on birth control methods and 6.3, on STDs.

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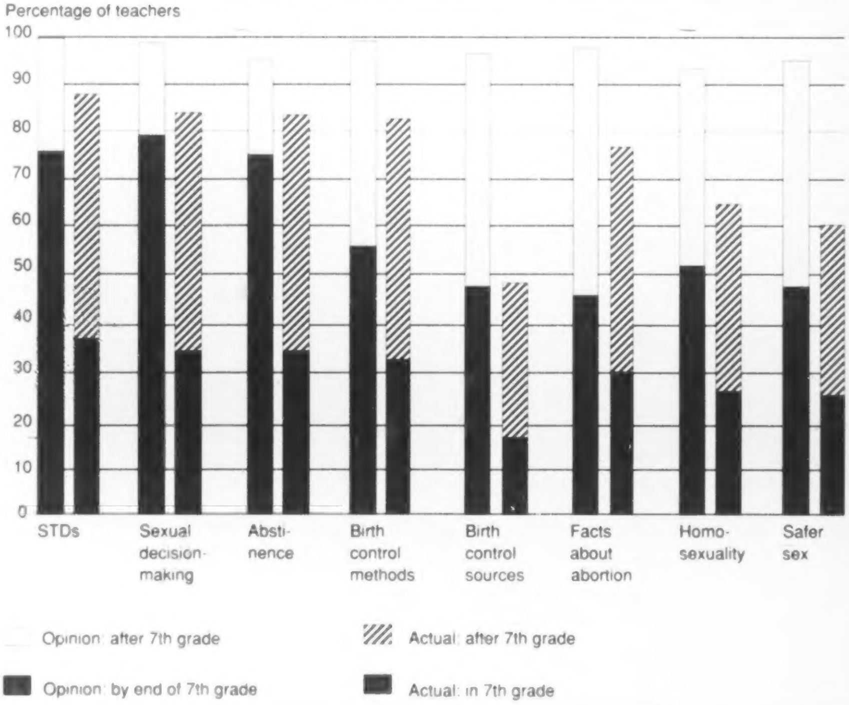
*The former proportion is based on responses naming grades below the seventh as well as grades 7–12. The latter proportion is based on schools where the topic is taught in the seventh grade or later (the survey did not provide data on teaching in grades six or lower). This latter proportion is estimated by multiplying the percentage of all respondents who are in schools where sex education is taught in grade seven and grades 8–12, by the proportion of sex education teachers in grade seven and in grades 8–12 who cover a specific topic. The product is then inflated to reflect the additional eight percent of teachers providing only AIDS education. The result for each topic may be interpreted as the proportion of students who are taught these specific topics, but it undoubtedly overstates that proportion, because 99 percent of teachers reported that sex education is an elective course in at least some grades. In fact, sex education is more likely to be an elective course in grade 11 (as reported by 61 percent of sex education teachers) or grade 12 (67 percent) than it is in grades seven (33 percent) or eight (36 percent).

**Figure 1. Comparison of teachers' opinions on when particular topics should be included in sex education with timing of actual instruction in the schools**



## Specific Information

- *Abstinence.* Encouraging abstinence is one of the most commonly cited goals of sex education teachers. Eighty-six percent teach that abstinence is the best alternative for preventing pregnancy and STDs, and one percent teach that it is the only alternative. Eighty-seven percent of the teachers talk to their students about the negative consequences of sexual intercourse for teenagers, and 83 percent try to help students avoid intercourse by providing instruction on how to resist peer pressure (80 percent) or how to say no to a boyfriend or girlfriend (79 percent).

Nonetheless, sex education teachers are aware that many students are sexually active, especially those in the higher grades. Although few believe that many of their seventh, eighth or ninth graders have had intercourse, 73 percent think that at least one-quarter of 10th graders have had sex, and 46 percent and 63 percent think that at least half of their 11th and 12th graders, respectively, have had intercourse.

The teachers' assessments of the likelihood that their students have had intercourse appear reasonable when compared with other data. Almost a quarter of male and female American teenagers have had intercourse before their 16th birthday, which generally occurs in the 10th grade, and slightly more than half have had intercourse before their 18th birthday.[9] Teachers' views that students should be taught about preventing pregnancy, STDs and AIDS by the end of the seventh or eighth grade appear to reflect a desire to provide instruction before too many are sexually active and at risk of unintended pregnancy and infection.

- *STDs and AIDS.* Almost all sex education teachers cover sexually transmitted diseases. They are most likely to cover AIDS (96 percent do so), gonorrhea and syphilis (89 percent) and genital herpes (84 percent). They are least likely to cover diseases that have gained prominence more recently, such as chlamydia (63 percent cover it), genital warts (51 percent) and pelvic inflammatory disease (45 percent).

The most commonly covered information about AIDS and other STDs is how they are transmitted and what their effects are, as shown in Table 4 (page 70). Covered almost as often are abstinence as a prevention, symptoms of the diseases, and use of condoms as a prevention. Teachers are, however, more likely to discuss these topics in connection with AIDS than with other sexually transmitted diseases. They are not as likely to talk about sexual monogamy as a way of preventing AIDS or other STDs, possibly because they put more emphasis on teenagers' not having sex at all. Eighty-six percent of teachers also talk about the importance of notifying all sexual partners when someone becomes infected with the AIDS virus, 77 percent tell their students that medical treatment for AIDS is confidential, and 65 percent give the names of clinics or other specific places students can go to for help with the disease. Again, the proportions who give this information for other STDs are slightly smaller, but they still represent the majority of sex education teachers.

Ninety-three percent of sex education teachers will refer students wanting help with STDs or AIDS to someone else (not shown). They most often refer students to their family doctor (82 percent) or to local family planning clinics (63 percent do so for AIDS and 68 percent, for other STDs). More than half of the teachers refer students wanting help to their parents (57 percent of those questioned about AIDS and 54 percent of those questioned about other STDs.) The school nurse is given as a source of help with STDs or AIDS by 60–61 percent. About one-third refer students to school guidance counselors. Nine out of 10 teachers who refer students wanting help give more than one potential source of help. On average, they provide 2.2 sources for AIDS and 3.0 for other STDs.

**Table 4. Percentage of sex education teachers covering specific information regarding AIDS and other STDs (N=1,538–1,635)**

| Topic | AIDS | Other STDs |
|---|---|---|
| How disease is transmitted | 95 | 83 |
| Effects of disease | 94 | 82 |
| Abstinence as prevention | 92 | 81 |
| Symptoms of disease | 91 | 82 |
| Condoms as prevention | 91 | 78 |
| Importance of notifying partners if infected | 86 | 79 |
| Sexual monogamy as prevention | 85 | 73 |
| Confidentiality of medical treatment | 77 | 72 |
| Specific sources of help for students | 65 | 62 |

• *Birth control methods.* Sex education teachers are more likely to discuss the pros and cons of available birth control methods (83 percent) and how each method works (74 percent) than how each is used (67 percent). Even fewer (about half) discuss specific providers that students can go to for contraceptive methods or discuss how to communicate with a sexual partner about birth control. Teachers are more likely to talk about each of these topics if birth control is part of their curriculum than if such discussion depends upon students' bringing up the topic.

Most teachers say they personally believe that if a teenage couple is engaging in sex, the best method for them is the condom (70 percent)—used alone (43 percent) or with another method (27 percent)—or the pill (40 percent)—alone (32 percent) or with the condom (eight percent).

The sex educators know that the effectiveness of birth control methods differs by method, even if used correctly and consistently, and that as actually used by teenagers, every method has an effectiveness much lower than its potential. When asked to give rates of potential effectiveness for various birth control methods, teachers, on average, correctly rank oral contraceptives as the most effective method (they say it is 98 percent effective), a condom with spermicides or alone as the next most effective (90–95 percent), and the diaphragm and natural family planning as the least effective (83 percent and 50 percent, respectively).

The teachers' estimates of the potential effectiveness of these methods are lower than many family planning experts would suggest, however, especially for the diaphragm and natural family planning. James Trussell and Kathryn Kost estimate that if couples used a contraceptive method correctly and consistently for one year, fewer than one percent of pill users would become pregnant, as would only two percent of condom users even if condoms were used without spermicides, three percent of diaphragm users and 10 percent or fewer of natural family planning users.[10]

Nevertheless, the teachers' estimates of the effectiveness of these methods in actual use by teenagers are some 20 points lower than their estimates of potential effectiveness (30 points in the case of natural family planning), indicating that they are aware that incorrect or sporadic use can make a large difference. Sixty percent of the sex education teachers say that they teach students the kinds of factors that contribute to effective method use.

Many teachers provide substantial information about the condom and how to use it, but they are more likely to encourage condom use for STD or AIDS prevention than for pregnancy prevention. Sixty-eight percent of all sex education teachers encourage condom use to prevent pregnancy, AIDS and other STDs; another 20 percent discuss it only with regard to prevention of AIDS or other STDs. Although 46 percent of sex education teachers address concerns about the condom, such as reduced sexual pleasure and lack of spontaneity, those who encourage its use for pregnancy prevention are significantly more likely to do so (63 percent) than those encouraging its use for prevention of AIDS and other STD infections (53 percent). Seventy-seven percent of sex education teachers talk about how to use a condom. Most (68 percent of all sex education teachers) tell students that condoms should be put on before any vaginal contact by the penis, and 45 percent teach that condoms should always be used with spermicides.

Sex education teachers also cover a number of issues with regard to oral contraceptives. At least 45 percent address the relationship between the pill and prevention of AIDS and other STDS, the health risk from taking the pill compared with having a baby, and smoking while using the pill. However, many sex education teachers do not have accurate knowledge about these topics or others about which students may raise questions. In response to true-false statements about oral contraceptives (shown in Table 5), almost all sex education teachers correctly answer that condoms should be used with the pill to protect against AIDS and other STDs, but fewer than three-quarters know that having a baby is a greater health risk for teenagers than taking the pill and that pill use does not stunt adolescent growth. More than half of the teachers have incorrect information or are unsure about some other topics that may be of relevance to students. Only a third correctly know that the pill does not have a detrimental effect on later fertility, and only one-quarter know that periodic rests from the pill are not needed and that young smokers can safely use oral contraceptives.

Those who say they cover a topic are more likely to have given an incorrect answer than to have admitted that they are unsure of the answer. Respondents who teach about the health risks of pill use compared with having a baby are an exception: They are equally likely to say they are unsure as to give an incorrect response.

Ninety-four percent of sex education teachers will refer students seeking help with birth control to the family doctor (82 percent do so), to a local family planning clinic (80 percent), or to their parents (about 67 percent). Some 55 percent also mention the school nurse. On average, the teachers refer students to 3.2 sources of help with birth control.

## Supports and Problems

Respondents who said they were currently teaching sex education were asked in an open-ended question to list and rank "the three biggest problems facing you as a sex education teacher." The most common problem cited is pressure from parents, the community or the school administration. Such pressure is listed as the biggest problem by 22 percent of the teachers and noted as one of the three biggest problems by 31 percent. Almost as many, 29 percent, have problems with materials or information—because they are inadequate, unavailable or dated, because teenagers find them uninteresting or difficult to read, or because the teachers have problems getting the materials approved for use—and 17 percent regard this aspect of their teaching as the biggest problem they face. A quarter of the sex education teachers say one of their biggest problems is with the students themselves, who do not feel free to talk about or are embarrassed by sex education topics, lack a basic knowledge of anatomy and physiology, are apathetic or have know-it-all attitudes, suffer from misinformation or lack of knowledge about issues covered in the course, lack values or morals, or have favorable attitudes toward teenage pregnancy. Sixteen percent of the teachers say these student-related difficulties are their chief problem.

Some 18 percent of sex education teachers say one of their three biggest problems is lack of enough time to cover the mate-

**Table 5. Percentage of sex education teachers, by their responses to true-false statements regarding oral contraceptives (N=1,217–1,374)**

| Statement | Correct | Incorrect | Unsure |
|---|---|---|---|
| Condoms should be used in conjunction with the pill to gain protection against AIDS and other STDs (T) | 95 | 3 | 3 |
| Having a baby is a greater health risk for a teenager than taking the pill (T) | 72 | 11 | 17 |
| Pill use by teenagers may stunt their growth (F) | 63 | 3 | 34 |
| Pill use by teenagers may have a detrimental effect on later fertility (F) | 34 | 25 | 41 |
| Young women who smoke should not take the pill (F) | 24 | 54 | 22 |
| Pill use should be stopped periodically to give the body a rest (F) | 23 | 52 | 25 |

rial. Almost 10 percent have problems with the structure of sex education in their school, believing that it is not taught early enough or that it should be mandatory. A similar proportion have personal difficulties teaching sex education: They feel that they have been inadequately trained, or they experience conflicts with their personal values, or they find it difficult to be objective about what they are teaching. Only five percent of respondents say they have no problems teaching sex education.

In answer to questions exploring further some of the difficulties sex education teachers face, 26–27 percent report that parental and community attitudes are not supportive of teachers' efforts to meet the needs of their students; 48–49 percent of teachers, however, believe that the parents and community do support their efforts. Although 64 percent of the sex education teachers think that their school administration supports their sex education efforts, 18 percent report that it does not. Those teachers who feel that community or parental attitudes are not supportive of sex education are significantly more likely to perceive the school administration as being nervous about possible adverse community reaction to sex education and significantly less likely to feel that the school administration supports their efforts.

Fifty-four percent of sex education teachers say that parents or parental representatives are involved in sex education in their school, through reviewing the sex education curriculum or materials used in their school (45 percent), or through developing or selecting sex education materials or attending special workshops on sex education (21–30 percent). Fifty-one percent of teachers say that parents are informed in advance about the topics that will be covered in sex education. Twenty-five percent report that, in addition, written parental permission is required for students to attend sex education classes. Another three percent teach in schools that require written permission for students who attend sex education classes but do not inform parents of the topics in advance.

Twenty-seven percent of those teaching sex education report that their school has a special advisory committee for the sex education program, and half of these say that such a committee is unique to sex education. Teachers are significantly more likely to report special advisory committees in schools where parental, community and administrative support for sex education is greatest.

Sex education teachers often do not have a free hand in determining what topics to cover. Thirty-seven percent are required to use a specific curriculum by their state, school district or school. Nineteen percent of the teachers report that formal constraints on teaching about birth control methods exist in their schools and an equal proportion report informal constraints.* Among teachers in schools that have formal constraints, only 37 percent say that birth control methods is a curriculum topic; and among teachers who report informal constraints, the figure is 65 percent. In contrast, 84 percent of those who say they face no constraints at all report that contraceptives are included in the curriculum. Thirteen percent of teachers who cite formal constraints do not discuss anything about birth control methods in class, compared with five percent of those that have informal constraints and three percent of those teaching with no constraints. Constraints are more common and more likely to be formal in schools where teachers feel that parental and community attitudes are not supportive of sex education, the school administration is nervous about possible adverse community reaction to sex education and the administration does not support the teachers' efforts.

At least 80 percent of sex education teachers who cover the topics discussed in this article say they need assistance with factual information, teaching materials or teaching strategies regarding those topics. At least 45 percent need all three types of help for each topic they cover, except that slightly fewer say they need factual information about abstinence and sexual decision-making. About 65 percent of those teaching about sexual transmission of AIDS and other STDs need teaching materials, and 68 percent who cover sexual decision-making need teaching strategies.

The lack of readily available appropriate teaching materials means that many sex education instructors must develop their own. Seven percent of the sex education teachers report that they themselves develop all the materials they use to teach about four of the topics—birth control, AIDS, other STDs and abstinence. Forty percent personally develop some of the materials they use to teach about abstinence, and another 23 percent report that they develop all their materials on this topic. Similar proportions develop some of their own teaching materials for instruction on birth control (45 percent), AIDS (39 percent) and other STDs (39 percent); and 14 percent, 10 percent and 13 percent, respectively, use only their own materials to teach about these topics. Fewer than half of the sex education teachers use any materials that have been prepared commercially or by organizations outside the school or school district to teach about abstinence (43 percent) and birth control (47 percent). Fifty-five percent use commercial or other outside materials for STD instruction, and 66 percent use such materials when they teach about AIDS.

Although almost all teachers report having difficulty teaching one or more topics within sex education, they do not all have trouble with the same topics. Between 22 percent and 25 percent of those who cover sexual decision-making, sexual transmission of AIDS and birth control methods have difficulty with these topics. Only 12–15 percent of those teaching about abstinence and STDs report that the topics are a problem. However, 45–59 percent of the instructors who cover correct condom use, homosexuality, "safer sex" practices and abortion say they have difficulty teaching these topics.

As for why they have difficulty, teachers once again cite actual or potential pressure from parents, the community or the school administration. Such pressures are the major reason teachers say they have difficulty teaching about birth control methods, correct condom use, abortion, homosexuality and "safer sex" practices—they are cited by 12–30 percent of those teaching these topics. Insufficient information is the most common reason given for difficulty in teaching about sexual transmission of AIDS and other STDs (it is reported by 13 and seven percent, respectively, of those covering these topics). This problem and student reactions are also important reasons for difficulty in teaching about homosexuality and "safer sex" practices (15–18 percent). Conflict with personal values figures as an important source of difficulty for those who teach about abortion (23 percent).

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*Details about these constraints were not explored, and the distinction between formal and informal constraints was left to the teachers' interpretation. Focus group and other information from teachers indicates that some are, in fact, expressly forbidden to talk about contraceptives, even in response to a student's question. In the case of others, the policy about how detailed their teaching can be is not officially conveyed, but limits are generally understood.

## Discussion

While this study indicates that sex education is taught in most public schools at some time during grades 7–12, it also finds that most topics related to prevention of pregnancy, AIDS and other STDs are taught less often and later than teachers in these schools think they should be. The largest discrepancies are in the areas of homosexuality, "safer sex" practices and sources of birth control.

The majority of the 50,000 teachers providing sex education are experienced educators who have training and experience in teaching the subject. Their primary identity is as a teacher of another subject, however, not as a sex educator, and for most of them, sex education represents a small proportion of their teaching load.

Many factors outside the classroom often make it difficult for teachers to meet the sex education needs of their students. The most common problem sex education teachers cite is pressure or fear of pressure from parents, the community or the school administration. Such concerns contribute to teachers' perceptions that they are restricted in what they can teach. This problem is most common for teachers who go beyond talking about AIDS and other STDs, sexual decision-making and abstinence to cover the pros and cons of birth control methods, proper use of a condom, homosexuality, "safer sex" practices and abortion. The perception by some teachers of a lack of support is at variance with the overwhelming support for sex education shown in national opinion polls.[11] Support for the concept of sex education may in fact be greater than support for specific topics or for sex education in one's local school, but there is some suggestion that school personnel underestimate community support for sex education.[12] Clear, specific and supportive state and district policies with respect to sex education could help teachers be less concerned about adverse pressures; current policies that require or encourage sex education appear too nonspecific to provide much real support for teachers; such policies, moreover, may not be widely known by teachers or others in the community.

Sex education teachers say a lack of appropriate teaching materials is a common problem, spanning all the topics they cover. Consequently, teachers must use valuable time to develop many teaching materials themselves. Because teachers are not experts in many of the topics they must cover, developing their own materials adds to the danger that dated, inaccurate information may be passed on to students. Many teachers list student reactions or lack of interest as one of their most important problems, and this may also be a reflection on the adequacy of available teaching materials and strategies. Additionally, it could reflect a discrepancy between the importance teachers place on the abstinence message and the fact that many of their students have already had sex.

That encouraging abstinence is such an important goal for the teachers belies the fear expressed by some members of the public that sex education is chiefly instruction about how to enjoy sexuality without becoming pregnant. In addition, the negative consequences of sexual activity—AIDS and other STDs, for example—are among the most frequently covered topics. In schools where birth control methods are in the curriculum, they are discussed together with abstinence, and abstinence, not contraceptive use, is taught as the best method for preventing pregnancy and STDs.

The finding that about one-quarter of the teachers who discuss birth control methods in class do so only in response to student questions suggests that tension exists between what teachers teach and what their students want to know. This situation not only may put the teacher in the uncomfortable position of worrying about possible adverse reactions from others if the students' questions are answered, but also may result in students' receiving inaccurate answers, if any at all. The high proportions of teachers who have inaccurate information or are unsure about facts related to oral contraceptives are distressing and raise concern about the teachers' levels of knowledge regarding all sex education topics.

Perhaps the most important step toward improved sex education would be increased, clear support of the teachers. One form this support should take is the development of curricula that provide teachers with constructive, planned ways to raise and deal with the topics on their students' minds, since the data indicate that students will often raise topics even if they are not in the curriculum. Greater support should also help increase the availability of high-quality instructional materials and ongoing education and information for teachers. Adequate teaching materials and support for teaching in earlier grades the topics students want to know about might help solve the problem of student inattention and negative reactions, to say nothing of helping with the problems of teenage pregnancy and the spread of AIDS and other STDs.

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# Drawing Women into Prenatal Care

*By Sarah S. Brown*

**Summary**
Participation in prenatal care services in the United States is low relative to that in many other developed countries, and rates of use are declining among some high risk groups. In 1986, 18 percent of all U.S. infants were born to women who delayed care until the second trimester of pregnancy; four percent, to women who initiated care in the third trimester; and about two percent, to women who obtained no prenatal care at all. Among the major barriers to prenatal care are inadequate insurance coverage, limitations in the Medicaid program, inadequate capacity in the maternity care system, lack of coordination between health and social services for low-income women and inhospitable conditions at some sites where prenatal care is delivered. The personal beliefs, knowledge, attitudes, fears and lifestyles of some pregnant women also constitute obstacles to care. For example, having an unwanted pregnancy, attaching little value to prenatal care and having a tenuous connection to the health care system in general are important predictors of insufficient care. Encouraging universal participation in prenatal care will require a major overhaul of the maternity care system. However, while consensus for fundamental reform builds, several immediate steps should be taken—such as reducing financial barriers to care; expanding the capacity of the maternity care system; improving the policies and practices that shape prenatal services at the site where they are delivered; and increasing public information.

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**"Although a new [maternity care] system might build upon existing arrangements, long-term solutions require fundamental reforms, not incremental changes in current programs."**

## Introduction

Full participation in comprehensive prenatal care that is well connected to hospital-based labor and delivery services has repeatedly been linked to declines in rates of maternal mortality, infant mortality and low birth weight.[1] Available evidence suggests that prenatal care is especially important for women at increased medical or social risk of poor birth outcomes.[2] Close to 20 other countries report lower rates of infant mortality than does the United States; these lower rates are probably due in part to higher rates of participation in prenatal care.[3]

In addition to being a valuable preventive service, prenatal care is cost-effective, particularly among low-income women. In 1985, the Institute of Medicine calculated that each dollar spent on providing more adequate prenatal care to a cohort of low-income, poorly educated American women could reduce total expenditures for direct medical care of their infants by $3.38 during the first year of life.[4] (The savings would result from a reduced rate of births under 2,500 g.) More recently, the U.S. Congress' Office of Technology Assessment estimated that "for every low-birth-weight birth averted by earlier or more frequent prenatal care, the U.S. health care system saves between $14,000 and $30,000 in newborn hospitalization, rehospitalizations in the first year, and long-term health care costs associated with low birth weight."[5]

Despite the growing recognition of the importance of prenatal care as a means of improving birth outcomes, the U.S. record on women's participation in prenatal services is not good, and for some groups is deteriorating. For these reasons, the Institute of Medicine (IOM) convened an interdisciplinary committee* in the summer of 1986 to study ways of drawing more women into prenatal care early in pregnancy and of sustaining their participation until delivery.

Initially, the committee was charged with analyzing "outreach services" for prenatal care—defined in the study as casefinding (identifying pregnant women and linking them to prenatal services) and social support (services to help keep women in care once they are enrolled). However, it became clear early on that outreach could not be studied in isolation from the larger systems of publicly and privately financed services through which women obtain prenatal, labor, delivery and postpartum care. One reason is that many projects labeled as "outreach" include activities that go beyond the conventional understanding of outreach, such as helping women to arrange financing for hospital-based childbirth. Second, the goals and content of outreach programs are so heavily influenced by the larger health care system within which the programs operate that it would have been difficult, if not useless, to analyze them separately. Third, outreach is not the only way to accomplish the goals of earlier registration and improved continuation in prenatal care; other approaches—such as ensuring that the capacity of the prenatal care system is adequate and improving the policies and practices that shape prenatal services at the site where they are provided—can have the same effect and thus merit study. Finally, it is irresponsible to study ways of drawing women into care if the system they enter cannot, or will not, be responsive to their needs. For these reasons, the boundaries of the IOM study were extended beyond outreach to address the larger question of how best to encourage increased participation in prenatal care, with outreach considered as only one of several means to achieve this goal.

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Over a period of two years, the IOM committee reviewed the trends in the use of prenatal services and the research on barriers to prenatal care, examined programs designed to improve access to care and formulated a number of recommendations. The committee's major findings are summarized below.[*]

**Table 1. Percentage distribution of births, by trimester of initiation of prenatal care, according to age and race, United States, 1986**

| Age and race | Trimester care begun | | | | |
|---|---|---|---|---|---|
| | 1st | 2nd | 3rd | No care | Total |
| ALL RACES | | | | | |
| **All ages** | **75.9** | **18.1** | **4.1** | **1.9** | **100.0** |
| <15 | 36.1 | 43.1 | 14.2 | 6.6 | 100.0 |
| 15–19 | 53.4 | 34.1 | 8.7 | 3.8 | 100.0 |
| 20–24 | 70.7 | 21.8 | 5.1 | 2.3 | 100.0 |
| 25–29 | 82.7 | 13.3 | 2.7 | 1.3 | 100.0 |
| 30–34 | 85.5 | 11.2 | 2.1 | 1.1 | 100.0 |
| 35–39 | 82.9 | 13.0 | 2.7 | 1.5 | 100.0 |
| ≥40 | 74.1 | 18.6 | 4.6 | 2.6 | 100.0 |
| WHITE | | | | | |
| **All ages** | **79.2** | **15.9** | **3.5** | **1.5** | **100.0** |
| <15 | 38.8 | 40.6 | 14.3 | 6.3 | 100.0 |
| 15–19 | 56.1 | 32.4 | 8.2 | 3.3 | 100.0 |
| 20–24 | 73.7 | 19.9 | 4.5 | 1.9 | 100.0 |
| 25–29 | 85.0 | 11.7 | 2.3 | 1.0 | 100.0 |
| 30–34 | 87.5 | 9.8 | 1.8 | 0.8 | 100.0 |
| 35–39 | 85.0 | 11.4 | 2.4 | 1.2 | 100.0 |
| ≥40 | 76.5 | 17.0 | 4.2 | 2.3 | 100.0 |
| BLACK | | | | | |
| **All ages** | **61.6** | **27.9** | **6.6** | **4.0** | **100.0** |
| 15–19 | 47.4 | 37.8 | 9.8 | 4.9 | 100.0 |
| 20–24 | 59.7 | 29.2 | 7.0 | 4.1 | 100.0 |
| 25–29 | 69.7 | 22.2 | 4.7 | 3.4 | 100.0 |
| 30–34 | 73.0 | 19.9 | 3.9 | 3.1 | 100.0 |
| 35–39 | 70.9 | 21.4 | 4.1 | 3.6 | 100.0 |
| ≥40 | 64.1 | 25.5 | 6.1 | 4.3 | 100.0 |

Source: National Center for Health Statistics, "Advance Report of Final Natality Statistics, 1986," *Monthly Vital Statistics Report*, Vol. 37, No. 3, Hyattsville, Md., 1988.

## Trends in the Use of Prenatal Care

As Table 1 shows, in 1986, only 76 percent of all U.S. infants were born to mothers who began prenatal care in the first trimester of pregnancy, as currently recommended. Eighteen percent were born to women who delayed care until the second trimester; four percent, to women who obtained care in the third trimester; and about two percent, to women who had no prenatal care at all. The record was worse for certain groups: Only 47 percent of black women aged 15–19 began prenatal care in the first trimester of pregnancy, and 15 percent either initiated care in the third trimester or obtained no care at all.

When vital statistics are analyzed to determine rates of adequate[†] care rather than trimester of initiation, a more discouraging picture emerges. In 1985, only 68 percent of all pregnant women obtained adequate prenatal care, 24 percent had an intermediate level of care, and eight percent had inadequate care.

An analysis of trends in the use of prenatal care suggests that progress in extending this basic preventive health service to increasing proportions of pregnant women has been poor, particularly since 1980. Table 2 shows that the proportion of births to mothers receiving care in the first trimester of pregnancy rose steadily from 1970 to 1980, but since 1980 has remained stable or has decreased. Among black women, declines in early use[‡] of prenatal care were registered in 1981, 1982, 1985 and 1986.

Table 3, which displays rates of late or no care, reveals a particularly troubling trend. Whereas the proportion of women obtaining late or no care diminished each year between 1969 and 1979, the downward trend halted in 1980. Since that year, the proportion of all births to women with late or no prenatal care has risen. Although this recent trend applies to all races, it is more pronounced among black women: In 1980, nine percent of births to black women were in this category; by 1986, 11 percent were. In fact, 1986 rates of late or no prenatal care among black women are about the same as those recorded in 1975; improvements in the interim have, in effect, been erased. An analysis of trends in the use of prenatal care between 1970 and 1983 (not shown) found that early enrollment for black mothers in 1982 was almost four percentage points below what it would have been if the 1976–1980 trend had continued, and was 11 percentage points below the expected level based on the 1970–1975 trend.

These disturbing trends present important challenges to public policy and to the health care system. Unlike many other health care services, prenatal care has been shown to be both useful and cost-saving, yet a substantial proportion of pregnant women fail to receive such care, and recent trends in utilization have not been in the right direction.

## System-Related Barriers to Care

Understanding the factors—or barriers—that limit participation in prenatal care is an important first step in figuring out how to increase access to such services. The committee identified a large literature in this area, and classified the known barriers into the three groups shown in Table 4.

Some of the barriers to full participation in prenatal care are well known; others are less so. In the former category are the problems of inadequate insurance, flaws in the Medicaid program and the absence of health insurance altogether. These barriers have been well documented in a recent study, which notes that it costs an average of $4,300 to have a baby in America—a

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[*] This article includes some 1986 vital statistics data, whereas the original report included data up to 1985 only.

[†] According to the widely used Kessner index, prenatal care is classified as "adequate" if it begins in the first trimester of pregnancy and includes nine or more visits during a pregnancy that lasts 36 or more weeks; it is classified as "intermediate" if it begins in the second trimester or includes 5–8 visits for a pregnancy lasting at least 36 weeks; it is considered "inadequate" if it begins in the third trimester or includes four or fewer visits for a pregnancy lasting 34 or more weeks. (See: D. M. Kessner et al., "Infant Death: An Analysis by Maternal Risk and Health Care," in *Contrasts in Health Status, Vol. I*, Institute of Medicine, National Academy of Sciences, Washington, D.C., 1973.)

[‡] The terms "early," "delayed" and "late" refer to prenatal care initiated in the first, second and third trimesters of pregnancy, respectively.

**Table 2. Percentage of babies born to women receiving early* prenatal care, by race, United States, 1969–1986**

| Year | All races | White | Black |
|---|---|---|---|
| 1969 | 68.0 | 72.4 | 42.7 |
| 1970 | 67.9 | 72.4 | 44.3 |
| 1971 | 68.6 | 73.0 | 46.6 |
| 1972 | 69.4 | 73.6 | 49.0 |
| 1973 | 70.8 | 74.9 | 51.4 |
| 1974 | 72.1 | 75.9 | 53.9 |
| 1975 | 72.3 | 75.9 | 55.8 |
| 1976 | 73.5 | 76.8 | 57.7 |
| 1977 | 74.1 | 77.3 | 59.0 |
| 1978 | 74.9 | 78.2 | 60.2 |
| 1979 | 75.9 | 79.1 | 61.6 |
| 1980 | 76.3 | 79.3 | 62.7 |
| 1981 | 76.3 | 79.4 | 62.4 |
| 1982 | 76.1 | 79.3 | 61.5 |
| 1983 | 76.2 | 79.4 | 61.5 |
| 1984 | 76.5 | 79.6 | 62.2 |
| 1985 | 76.2 | 79.4 | 61.8 |
| 1986 | 75.9 | 79.2 | 61.6 |

*Care initiated in first trimester.

Source: Published and unpublished vital statistics data from the National Center for Health Statistics.

figure that includes hospital and physician charges for prenatal care, labor and delivery services, a postpartum checkup and hospital services for the newborn; considering that the average annual income of a couple in their early 20s—the prime childbearing years—is about $19,800, pregnancy and childbirth can be a great financial burden.[8] Therefore, it is not surprising that financial status and health insurance coverage play major roles in determining whether or not a woman obtains prenatal care. Despite the importance of health insurance, an increasing number of Americans—some 37 million at present—are without any insurance, and women of childbearing age are disproportionately represented among the uninsured. About 26 percent of women of reproductive age (some 15 million women) have no insurance to cover maternity care, and two-thirds of this group (10 million) have no insurance at all.[9]

**Table 3. Percentage of babies born to women obtaining late* or no care, by race, United States, 1969–1986**

| Year | All races | White | Black |
|---|---|---|---|
| 1969 | 8.1 | 6.3 | 18.2 |
| 1970 | 7.9 | 6.2 | 16.6 |
| 1971 | 7.2 | 5.8 | 14.6 |
| 1972 | 7.0 | 5.5 | 13.2 |
| 1973 | 6.7 | 5.4 | 12.4 |
| 1974 | 6.2 | 5.0 | 11.4 |
| 1975 | 6.0 | 5.0 | 10.5 |
| 1976 | 5.7 | 4.8 | 9.9 |
| 1977 | 5.6 | 4.7 | 9.6 |
| 1978 | 5.4 | 4.5 | 9.3 |
| 1979 | 5.1 | 4.3 | 8.9 |
| 1980 | 5.1 | 4.3 | 8.8 |
| 1981 | 5.2 | 4.3 | 9.1 |
| 1982 | 5.5 | 4.5 | 9.6 |
| 1983 | 5.6 | 4.6 | 9.7 |
| 1984 | 5.6 | 4.7 | 9.6 |
| 1985 | 5.7 | 4.7 | 10.0 |
| 1986 | 6.0 | 5.0 | 10.6 |

*Care delayed until third trimester.

Source: Published and unpublished vital statistics data from the National Center for Health Statistics.

Among the lesser recognized obstacles to prenatal care are those posed by inadequate capacity in the maternity care system, particularly that portion of the system relied on by low-income women. Inadequate capacity encompasses two related issues: First, there are not always enough health department clinics, community health centers or similar facilities in every community to provide prenatal care to those unable or unwilling to use the private health care system, and the waiting time for appointments in facilities that do exist is often long. Second, the availability of maternity care providers is limited, as a result of the uneven distribution of physicians, the unwillingness of some physicians to care for low-income or Medicaid-enrolled pregnant women, and the disincentives to practicing obstetrics caused by rising malpractice insurance rates.

In the absence of comprehensive state or national data, it is impossible to determine how widespread system capacity problems are or whether other care networks have been able to meet changing needs. However, numerous reports suggest that in some communities, prenatal care services are so limited that women may not be served promptly, if at all. For example, in San Diego County, California, between June and August 1986, publicly financed community clinics turned away 1,245 women seeking prenatal care because the clinics were filled to capacity.[10] Similarly, in Orange County, California, 2,000 women who sought care in the county's prenatal clinics in 1985 could not be given appointments; half of the patients who could not be cared for at county clinics were unable to obtain prenatal care elsewhere in the county.[11] It is important to stress that in the same communities where maternity care capacity is inadequate to meet the needs of low-income women, there may be adequate, even excess capacity to serve affluent women.

Even if insurance is in hand and system capacity is adequate, participation in prenatal care may be limited because of such problems as inadequate coordination among services, inconvenient service hours, complicated registration procedures, long waits to see the doctor or nurse, rude personnel and uncomfortable sur-

**Table 4. Barriers to use of prenatal care**

**I. Sociodemographic**

- Poverty
- Residence—inner-city or rural
- Minority status
- Age—<18 or >39
- High parity
- Non-English-speaking
- Unmarried
- Less than high school education

**II. System-related**

- Inadequacies in private insurance policies (waiting periods, coverage limitations, coinsurance and deductibles, requirements for up-front payments)
- Absence of either Medicaid or private insurance coverage of maternity services
- Inadequate or no maternity care providers for Medicaid-enrolled, uninsured and other low-income women (long wait to get appointment)
- Complicated, time-consuming process to enroll in Medicaid
- Availability of Medicaid poorly advertised
- Inadequate transportation services, long travel time to service sites, or both
- Difficulty obtaining child care
- Weak links between prenatal services and pregnancy testing
- Inadequate coordination among such services as WIC and prenatal care
- Inconvenient clinic hours, especially for working women
- Long waits to see physician
- Language and cultural incompatibility between providers and clients
- Poor communication between clients and providers, exacerbated by short interactions with providers
- Negative attributes of clinics, including rude personnel, uncomfortable surroundings, and complicated registration procedures
- Limited information on exactly where to get care—phone numbers and addresses

**III. Attitudinal**

- Pregnancy unplanned, viewed negatively, or both
- Ambivalence
- Signs of pregnancy not known or recognized
- Prenatal care not valued or understood
- Fear of doctors, hospitals, procedures
- Fear of parental discovery
- Fear of deportation or problems with the Immigration and Naturalization Service
- Fear that certain health habits will be discovered and criticized (smoking, eating disorders, drug or alcohol abuse)
- Selected lifestyles (drug abuse, homelessness)
- Inadequate social supports and personal resources
- Excessive stress
- Denial or apathy
- Concealment

roundings. Additionally, pregnant women may face transportation difficulties, lack of child care and cultural barriers to participation in prenatal care. Although many of these problems affect primarily low-income women, they are not limited to the poor. For example, women at all income levels may experience problems arranging for child care or taking time off from work for a prenatal visit.

Inadequate coordination of services as a barrier to care deserves particular emphasis. Several federal programs support prenatal care and related services to low-income women, and each is designed to serve a different function. For example, Medicaid is a source of payment for services, Maternal and Child Health block grants to states often help to pay for prenatal services, community health centers provide direct prenatal care and the Special Supplemental Food Program for Women, Infants and Children (WIC) provides nutritional supplementation and education. In theory, these programs can furnish pregnant women with a wide array of maternity services, but in fact, the programs are not always carefully coordinated at the local level. Moreover, the links among publicly financed services, private physicians and such other service systems as welfare and low-income housing are often fragile or nonexistent.

Without doubt, insufficient funding of these programs has greatly contributed to their inability to ensure full access to comprehensive prenatal care. For example, although Congress appropriated $457 million for the MCH block grant in FY 1986, all 19 states and territories surveyed by the Southern Regional Task Force on Infant Mortality claimed that block-grant funds were inadequate to meet maternity care needs.[12] Even when programs *are* fully funded, they are difficult to coordinate because they often have separate administering agencies, rules and guidelines, and differing organizational and political constraints. For example, although a woman may be eligible for both Medicaid and for prenatal services through a health department clinic, to enroll in both systems she may have to apply at different sites, meet different eligibility standards and furnish different documentation. Moreover, the programs may rely on different providers. In some areas, public health clinics and community health centers are not certified as Medicaid providers; consequently, the choices available to pregnant women enrolled in Medicaid may be limited in those communities.

A weak link between pregnancy testing and prenatal care is another example of poor service coordination. Although pregnancy tests are widely available in a variety of settings, anecdotal reports suggest that a positive pregnancy test does not routinely lead to a prompt prenatal care appointment for women who choose to carry the pregnancy to term. At pregnancy testing sites, providers commonly furnish telephone numbers for prenatal services, but they are less likely to schedule a first prenatal visit or to follow up on broken appointments. The gap between the two services can lead to major delays in the onset of prenatal care. One study in Ohio found that almost 40 percent of a sample of low-income women waited two or more months after a positive pregnancy test to make an appointment with a prenatal care provider.[13] Although ambivalence about pregnancy may account for part of this delay, the Ohio study and others reveal a need for better coordination among systems.

## Attitudinal Barriers to Care

Other barriers that are often overlooked in discussions of poor use of prenatal care services include the personal beliefs, knowledge, attitudes and lifestyles of pregnant women. For example, many studies have found that later entry into care and fewer prenatal visits are associated with unplanned pregnancy and with negative views of a current pregnancy.[14] These attitudes may influence participation in prenatal care in at least three ways: Women who do not plan their pregnancy may be less aware of the signs of pregnancy and may consequently recognize their pregnancy later; women who view their pregnancies negatively may delay prenatal care while they decide whether to continue the pregnancy; and women who have an unplanned pregnancy are likely to have ambivalent feelings, even if they decide to continue the pregnancy. This ambivalence may result in late entry into, or sporadic use of, prenatal care.

Women's attitudes toward prenatal care itself may also influence the initiation of care. Not all women are convinced that prenatal care is important.[15] Some believe that pregnancy is a normal event that only requires medical supervision if the pregnant woman feels ill; and a few women may actually be unaware of what prenatal care is. Previous, unsatisfying experiences with prenatal services may also act as a deterrent to seeking care. The provider practices and clinic policies outlined earlier undoubtedly leave some women with a negative view of prenatal care and reluctant to seek it out in subsequent pregnancies. Studies that have assessed the relationship between attitudes toward prenatal care and onset of care show that women who believe the service is important and should be initiated early are more likely to begin care in the first trimester than are those who attach less importance to early care.[16] The predictive value of positive attitudes toward prenatal care should not be overestimated, however. One study noted that among a sample of women who began care in the third trimester, 42 percent believed prenatal care should begin during the first few weeks of pregnancy.[17]

Fear is another important barrier to participation in prenatal care. A survey of women who had received no prenatal care found that 52 percent indicated fear of hospitals, doctors or procedures as a primary reason for not seeking care.[18] A researcher who conducted in-depth interviews with disadvantaged women who had suffered an infant death found that "fear of doctors and nurses represented the single most important factor in their perception of health care providers as inaccessible."[19]

Adolescents are particularly likely to cite fear as a reason for not seeking early care. Some pregnant adolescents are afraid of medical procedures, and many also fear the pregnancy itself and parental response to it.[20] A postpartum teenager who delayed care explained, "When I went to the doctor I was six and a half months pregnant—I found out when I was eight weeks. I didn't go right away because it took me that long to tell my mom."[21] Teenagers who may be eligible for Medicaid during a pregnancy may be concerned about confidentiality; unless they are assured of it, they may choose to protect their secret rather than to seek prenatal care.

Illegal immigrants may not obtain care because they are afraid of being reported to the Immigration and Naturalization Service (INS) and eventually deported. While clinics do not routinely report illegal aliens, the mere possibility that they may do so can be a sufficient deterrent. In Los Angeles County, for example, the board of supervisors voted a few years ago to require all persons requesting free or reduced-cost health services to apply first for Medi-Cal, a process that necessitates completing a form that is sent to the INS. Although the policy never went into effect because of a court injunction, it created substantial anxiety among undocumented families. A community health center pediatrician in Los Angeles County reported that the fear generated by the proposal immediately led to a 50 percent decrease in the number of children attending his clinic.[22]

Pregnant women who are aware that their life-styles place their health and that of their babies at risk may fear seeking care because they anticipate sanctions or pressure to change such habits as drug and alcohol abuse, heavy smoking and eating disorders. Substance abusers in particular may delay care for fear that they will be arrested and their other children taken into custody.

### Women's Perceptions of Barriers

Despite the extensive literature on barriers to prenatal care, little attention has been paid to the relative importance that women themselves attach to various obstacles. To begin filling this gap, the IOM committee reviewed a number of studies that asked women to identify the factors that had limited their use of prenatal services during pregnancy. In addition, the committee examined a number of studies that had used multivariate analysis to define demographic, social, attitudinal and other characteristics that predict insufficient prenatal care.* Only studies completed in the last 10 years were reviewed.

- *Women who obtain insufficient care.* Fifteen of the studies[23] surveyed women who had obtained insufficient care. Some of these studies asked women to fill out a checklist or questionnaire about the barriers they experienced,† and several relied on open-ended questions. The studies reveal that for this group of women, financial barriers—particularly inadequate or no insurance and limited personal funds—are the most important obstacles to obtaining prenatal care. However, many women who do not obtain sufficient prenatal care also attach a low value to prenatal services. Lack of transportation represents a substantial barrier to care as well, although transportation problems should probably be viewed primarily as representative of general financial stress (in particular, lack of access to a car) rather than as a separate obstacle.

Other factors frequently cited include some variation on "I didn't know I was pregnant" and inhospitable institutional practices, such as long waits in clinics. The open-ended questions also reveal that women regard limited provider availability and dislike or fear of prenatal care as important obstacles to care.

- *Women who obtain no care.* Six surveys[24] analyzed barriers reported by women who obtained no prenatal care at all, a group that is widely recognized as being at high risk for numerous social and medical problems. In five of the six surveys, financial problems were cited as being the greatest obstacle to obtaining prenatal care. The second most frequently cited barrier was a low valuation of prenatal care—a finding that suggests that many women who receive no prenatal care are particularly isolated from health services in general and may have only a limited appreciation or knowledge of their value. This finding is also consistent with the view that women who do not obtain care live complicated, highly stressful lives characterized by daily problems and struggles. It is perhaps not surprising that prenatal care is a low priority for such women. Other commonly cited barriers are transportation difficulties, inhospitable institutional practices and a dislike or fear of prenatal services.

Two of the studies asked women who had received no care if they had tried to obtain prenatal services.[25] The findings indicate that 40 percent and 27 percent, respectively, had not sought care. Such high proportions are consistent with the low value women with no care report attaching to prenatal services and, perhaps, with their expectation of encountering difficulties in obtaining care. Conversely, 60 percent and 73 percent of the two groups, respectively, stated that they had tried to get care, a finding that underscores the power of the other barriers.

It should be noted that many of these studies were conducted before the increase in drug use associated with "crack." If these surveys were repeated in 1989, drug use might surface as a more prominent reason for insufficient use of prenatal care, and particularly for lack of care altogether, although drug-abusing women may not readily admit their habit.

The picture that emerges from these sources is of a group of women with multiple problems that stand between them and prenatal services. Financial problems and social isolation and disorganization compound one another, resulting in failure to receive any prenatal supervision at all. Thus, it is unlikely that any single corrective step, such as removing financial barriers to care, would solve all the access problems for members of this group. The data suggest that a variety of interventions will be needed, aimed as much at basic social functioning as at economic status.

- *Adolescents.* Three studies assessed teenagers' views of barriers to prenatal care—statewide surveys carried out in Massachusetts[26] and South Carolina,[27] and a survey conducted in Hartford, Connecticut.[28]

The Massachusetts survey reported on 302 female teenagers aged 19 and under. The top four barriers to prenatal care reported by these teenagers were, in descending order, a lack of health insurance or not enough money to pay for care, fear of doctors and medical procedures, ambivalence about pregnancy, and denial. The South Carolina survey, which questioned 63 teenagers aged 17 and younger, found that the four most common barriers reported were lack of money or insurance, lack of transportation, problems with scheduling an appointment and long waiting times in clinics. The Hartford survey studied 73 teenagers who were pregnant for the first time and under age 18 at the time of conception. About one-third of these adolescents entered prenatal care in the first trimester of pregnancy, and the remainder did so in the second or third trimester. They reported that denial of the pregnancy, fear of maternal reaction, shame and fear of being seen in a clinic were the most significant reasons for their not obtaining earlier prenatal care. Financial problems and lack of knowledge about how to enter the health care system were of secondary importance. The authors of the Hartford study point out, however, that cost may not have emerged as an important barrier because "prenatal care in Hartford [through the health department] is free for Hartford residents. No one is required to bring cash to any visit, nor is a bill sent."[29]

These three studies suggest that both personal and financial issues are major concerns for adolescents, as they are for many older women. For the younger women, however, psychological factors, including fear, shame and denial, may overshadow financial obstacles, at least at the outset. Given their youth, adolescents may be particularly unlikely to know much about prenatal care and may be particularly likely to place a low value on what they do know. Common sense suggests that when adolescents seek care, the problems of limited personal funds and no insurance will also loom large. Teenagers are unlikely to have the personal resources to pay for care themselves, and if an adolescent has private health insurance as a family dependent, the policy may exclude coverage for her prenatal care.

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*"Insufficient" care is a general label used to describe care that is neither adequate nor begun early in pregnancy.

†The committee's full report contains a detailed list of all the reasons for not seeking care or for obtaining care late in the pregnancy that were presented to women in the checklists used in the studies analyzed.

- *Multivariate analyses.* Twelve studies[30] used multivariate analysis to consider the combined effect of demographic risk factors, barriers to care and women's perceptions of those barriers on participation in prenatal care. It was not possible to pool the results of these analyses because few of the studies examined all the same variables. Synthesis was also made difficult because many studies constructed unique scales to measure various factors thought to predict the use of prenatal services. However, even without pooled results, several clear themes emerged from the studies.

The studies confirm the importance of many of the well-known demographic risk factors for insufficient prenatal care—being poor (especially inadequate or no insurance), being unmarried, being under 20 years of age, being of high parity and having less than a high school education. Enrollment in Medicaid at the time of delivery is also frequently found to be predictive of *insufficient* care, demonstrating that although having Medicaid may be better for poor women than having no insurance, the program has been unable to draw all low-income women into care efficiently and early. In addition, the analyses revealed that having an unintended pregnancy, attaching little value to prenatal care, having a tenuous connection to the health care system and harboring negative attitudes toward providers were also predictors of insufficient care. However, belonging to a minority group was not found to be an important predictor of insufficient care, suggesting that the concentration of other risk factors among minority groups—such as poverty and lower levels of educational attainment—is what accounts for their lower level of care.

### Programs to Improve Participation

To determine what kinds of efforts are likely to improve participation in prenatal care, the committee analyzed 31* current or recently completed programs, which were selected for study largely on the basis of the availability of quantitative data showing program impact. The programs were characterized according to their primary approach to improving access to services:

**1.** Reducing the financial obstacles to care experienced by poor women through the provision of insurance or other source of payment;

**2.** Expanding the capacity of the prenatal care systems relied on by many low-income women (health department clinics, the network of private physicians who care for Medicaid-enrolled and other low-income women, hospital outpatient departments, community health centers and other similar facilities);

**3.** Improving institutional practices to make services more easily accessible and acceptable to clients;

**4.** Attracting women in need of prenatal care through a wide variety of casefinding methods, including telephone hotlines, community canvassing using outreach workers or other paraprofessional personnel, cross-agency referrals and the provision of incentives; and

**5.** Providing social support to encourage continuation in prenatal care.

The latter two approaches include the majority of activities generally viewed as outreach. Consonant with the committee's charge, a special effort was made to examine programs in these categories.

Program data revealed that with a considerable commitment of resources, each of these five strategies can improve participation in prenatal care, whether participation is measured by month of enrollment in care or the number of prenatal visits. Nonetheless, many programs meet with only modest success, primarily because they are anomalies in a complicated, fragmented "nonsystem" of maternity services characterized by pervasive financial and institutional obstacles to care.

Despite the prominence of financial barriers to care, very few programs take a direct approach to removing those barriers; consequently, the committee was able to study only a few programs in the first category. Programs often try to ease financial obstacles by enlarging the clinic system rather than by enabling low-income women to use existing providers, such as private physicians. Although the reluctance of the federal government and most states to mount a frontal attack on financial barriers is unfortunate, it is not surprising given legislators' concerns about the cost of entitlement programs.

Programs that focus on increasing the capacity of the prenatal care system relied on by low-income women—the second approach—can also improve participation. A central feature of many of these programs is the use of nurse practitioners, certified nurse-midwives and other midlevel personnel. Such practitioners have a proven ability to work well with low-income, often high-risk clients; they do not require as large a share of program costs as do physicians; and they are more likely than some physicians to be willing to work in a public clinic.

With regard to the third programmatic approach—improving institutional practices—the committee found persuasive data showing that how clients are treated, what the clinic office procedures are and what the atmosphere of the setting is can have an impact on participation in prenatal care. However, the committee found a great reluctance to change institutional practices as a way of increasing participation. It is unclear whether this hesitation is caused by negative experiences in dealing with large bureaucracies, by problematic relationships between the nonphysicians who develop many of these programs and the physicians who provide the care in them, or by other factors. Complaints from pregnant women about long waits, rude staff and lack of continuity of care are seldom addressed by working with the physicians in charge of clinics; more often, a new facility is opened or superficial changes in clinic practices are instituted.

Programs that focus on casefinding and social support to encourage use of prenatal care—the fourth and fifth approaches—presented the committee with a wealth of data and impressions, not the least of which was the creativity shown by many program planners who devise outreach programs to identify women in need of services and draw them into care. However, despite the good intentions and energy of program personnel, these programs generally meet with very modest success at best. Because outreach programs typically lack the influence or the money to remove such major obstacles as lack of insurance or the paucity of providers willing to care for poor women, their impact is often limited. Yet, communities often prefer to fund outreach services rather than to take on the more challenging task of repairing fundamental flaws in the prenatal care delivery system. Repeatedly, outreach programs are organized to help women over and around major barriers to care, but the obstacles themselves remain. In the words of one committee member, organizations whose primary focus is casefinding and social support seem to be "waging guerrilla warfare" against institutions that are turning away patients deliberately or as an inadvertent consequence of their financial and other policies.

Nevertheless, it is apparent that *in settings where financial and institutional barriers have been significantly reduced*—a major qualification—certain types of casefinding and social support may help to improve participation in prenatal care. Such outreach initiatives include offering telephone hotline and referral services that make prenatal appointments and assist callers in arranging needed maternity, health and social services; using television and, in particular, radio spots to announce specific services, coordinated with posters displayed in mass transit systems; encouraging current program participants to recruit additional participants from among their friends, neighbors and relatives; fostering strong referral ties among prenatal programs and family planning clinics, schools, housing programs, WIC agencies, welfare and unemployment offices, shelters for the homeless, the police and corrections systems, substance-abuse programs and treatment centers, and other health and social service networks; and linking high-risk pregnant women to a single caseworker who will ensure that clients receive the services they need through advocacy, careful follow-up and tangible assistance (such as helping with transportation to prenatal care appointments). Whatever the method used, casefinding and social support appear to be most effective when directed toward well-defined high-risk populations, and efforts must be made at the outset to determine who these groups are.

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*These 31 programs are described and analyzed extensively in the full Institute of Medicine report, particularly in Appendix A.

## Conclusions and Recommendations

Poor rates of participation in prenatal care reveal that the American maternity care system* is fundamentally flawed, fragmented and overly complex, particularly for low-income women, women who are uninsured or underinsured, teenagers, inner-city and rural residents and newly arrived immigrants. If maternity services are to improve significantly, policymakers and the public must recognize that pregnancy and childbearing are profoundly important events that require carefully formulated social policies and supports. Consequently, it is imperative that the nation adopt as a new social norm the principle that all pregnant women should be provided with access to prenatal, labor, delivery and postpartum services appropriate to their needs. Maternity services must not be viewed as a consumer good available only to women with financial and personal assets, but as an essential part of the country's social and health services, comparable to the entitlement to public education; they must be widely available, valued and used by virtually all women. The merit of such a social policy is amply supported by data on the efficacy and cost-effectiveness of prenatal care, and is consistent with basic civility and compassion, with the concept of investing adequately in future generations and with the need to provide special care during a particularly vulnerable phase of life. In order for this principle to become a widely shared value, action in all sectors of society and clear leadership from the public sector, in particular, will be necessary.

Attaining full participation in prenatal care requires major reforms in the organization, financing and delivery of maternity services in this country. By continuing to make minimal changes in existing programs, we are unlikely to meet the standard of universal participation. Slowly implemented, often small expansions of Medicaid eligibility, brief bursts of publicity about infant mortality and the importance of prenatal care, and efforts in a few communities to increase the number of clinics offering prenatal services are all actions that, while laudable, are too limited, sporadic and uncoordinated to overcome existing barriers to care. Consequently, the President, members of Congress and other national leaders in both the public and private sectors should commit themselves unequivocally to designing a new maternity care system dedicated to drawing all women into prenatal care and providing them with an appropriate array of health and social services throughout pregnancy, childbirth and the postpartum period. Although a new system might build upon existing arrangements, long-term solutions require fundamental reforms, not incremental changes in current programs.

Once the political will to create a new system has been mustered, several options for designing that system can be explored. For example, Congress could appoint a commission of experts knowledgeable about the maternity care system and public policy to recommend a course of action; or a group of experts within the U.S. Department of Health and Human Services could be assembled; or Congress could itself develop alternative proposals, drawing on the expertise of established congressional committees and such resources as the Office of Technology Assessment; or an independent group could be asked for advice. Whatever the means chosen, the decision to enact major reforms must *precede* the work of a commission or other group. Too often, studies are funded or panels are appointed without such a commitment and then, when recommendations are made, implementation may fail to take place altogether. Once the components of the system have been defined, action to implement the recommendations must follow; otherwise, the effort will be futile and may actually be destructive because it will raise false hopes among those in need.

While consensus about the need for major restructuring of the maternity care system builds, and while the specifics of a new approach are being defined, several more immediate steps could be taken to increase participation in prenatal care. Although some of them are quite far-reaching, they all derive from and are based on the existing complex of programs and services that make up the web of U.S. maternity care. Short-term remedial efforts should emphasize four goals: reducing financial barriers to care; increasing the capacity of prenatal care systems; improving the policies and practices that shape prenatal services at the site where they are delivered; and increasing public information about prenatal care.

Reducing financial barriers to care should be the cornerstone of these short-term efforts. Although expansions of Medicaid eligibility and creative state initiatives have made some progress in increasing access to prenatal care, the pace of change needs to accelerate and remaining financial obstacles need to be removed. Specifically, all states should be required to provide Medicaid coverage of prenatal care for pregnant women with incomes up to 185 percent of the poverty level—presently, states can do so voluntarily—and they should eventually expand eligibility beyond 185 percent of poverty to cover greater numbers of uninsured or underinsured women; state and local health departments, as well as federal grant programs (particularly the Maternal and Child Health Services block grant and the programs funding community health centers, rural health centers and migrant health centers) should receive more generous financing so that free or reduced-cost prenatal care programs can be offered without delay; and private insurance coverage of maternity services should be expanded. (For example, Congress could mandate that all employers covered by the Fair Labor Standards Act provide a package of maternity services to employees and their dependents; it could repeal the exemption contained in the Pregnancy Discrimination Act that allows employers of fewer than 15 persons to provide no pregnancy coverage; and it could also modify the Employee Retirement Income Security Act to permit states to require that self-funded employer health plans provide maternity benefits.)

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*That is, the complicated network of publicly and privately financed services through which women obtain prenatal, labor and delivery, and postpartum care.

The need for modifications in the Medicaid program merits special emphasis. However generous the eligibility expansions, little will be gained if the task of applying for and maintaining Medicaid coverage remains so complicated and time-consuming that prompt participation in prenatal care is virtually impossible for all but the most determined women. Accordingly, states should shorten and simplify the process of obtaining Medicaid coverage for prenatal services. Adopting the more generous eligibility standards outlined above and eliminating or simplifying the assets test can help in meeting these goals. In addition, a number of other options can be implemented, including placing workers who determine eligibility in maternity clinics that serve low-income populations, requiring minimum documentation from women in need of Medicaid, using a single application form for enrollment in several programs and employing bilingual interpreters in communities with non–English speaking populations. And of course, the availability of Medicaid must be aggressively advertised.

Several other, more general steps can be taken to increase participation in prenatal care: Services should be listed under several headings in the telephone book; telephones at care facilities should be well staffed so that callers do not constantly reach a busy signal; the media should be used to inform women of the location of prenatal care facilities and appointment hours, to advertise new maternity programs and to alert women to other relevant services; services should be located near public transportation and transportation costs should be subsidized or provided directly; women should be assured of seeing the same provider at each prenatal visit; clinics should stagger appointments so that women spend a minimal amount of time in the waiting room; patients should be treated courteously by all the staff; and staff should be trained to have a positive orientation toward clients.

To supplement these efforts in the health care system, public and private groups—the government, foundations, health service agencies, professional societies and others—must invest in a long-term, high-quality public information campaign to educate Americans about the importance and benefits of prenatal care and the need to begin such care early in pregnancy. Messages about prenatal and maternity topics should be coordinated with educational campaigns that address the issue of unplanned pregnancy, which plays such an important role in determining when women initiate care. Given that about half of all pregnancies in the United States are believed to be unintended at the time of conception,[31] it is critical that efforts be made to promote family planning information and services.

Although available data suggest that the short-term strategies outlined above would lead to major improvements in the use of prenatal care services, they would probably not bring about participation by all pregnant women. A few very high-risk women will probably remain without prenatal care because of apathy, fear, denial, extreme social isolation, drug addiction or other problems. These hard-to-reach women will need special outreach services to locate and enroll them in prenatal care and then to provide them with enough support and attention that they do not drop out of the system along the way.

As noted earlier, however, initiatives to increase participation in prenatal care should not rely on outreach services to correct the major financial and institutional barriers that currently impede access. Rather, outreach should be only one component of a well-designed maternity care system, and should be carefully targeted to high-risk women who remain unserved despite easily accessible services. Outreach should only be funded when it is linked to such a system or, at a minimum, when it is part of a comprehensive plan to strengthen maternity services. To fund outreach alone in the hope that it will lead to major improvements in the use of prenatal services is naive and wasteful.

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*(Continued on page 88)*

# Research Note

## The Geographic Distribution of U.S. Hospitals With Abortion Facilities

*By Raymond Tatalovich and Byron W. Daynes*

### Introduction

Abortion utilization rates have been shown to be strongly related to the local availability of abortion services.[1] In general, the availability of abortion services in the United States is uneven; in 1985, for example, 50 percent of metropolitan counties had an abortion provider, compared with nine percent of nonmetropolitan counties.[2] The vast majority of abortions are performed in nonhospital settings, especially in recent years. In 1976, 35 percent of all induced abortions were performed in hospitals;[3] by 1985, this proportion had fallen to 13 percent, with abortion clinics (60 percent), other clinics (23 percent) and doctors' offices (four percent) accounting for the remainder of the abortions performed in that year.[4] Nonhospital settings are now regarded as the optimal means for providing easily accessible, relatively inexpensive and safe terminations of pregnancy; the higher cost of hospital abortions largely explains the trend toward increasing utilization of clinics for abortion services.

However, in places where nonhospital abortion facilities are few and widely separated, especially in nonmetropolitan areas of the country, the availability of abortion services at hospitals is a key element in abortion accessibility. Moreover, the poor rely heavily on hospital emergency rooms for their medical care, especially with regard to abortion services; in 1976, for example, 69 percent of Medicaid abortions were performed in hospitals.[5] Thus, if local hospitals do not offer abortion services, disadvantaged women in less densely populated areas will face special burdens when they search for an alternate abortion facility.

The availability and utilization of abortion services in the United States are monitored by The Alan Guttmacher Institute (AGI) through its periodic national surveys of all known providers. For its ninth and most recent survey, conducted in 1986, the AGI sent questionnaires to all facilities known to have been performing abortions during 1981–1982 (those identified in the eighth such survey), as well as to any new providers identified through professional organizations. The resulting sample of 2,680 known providers in 1985 comprised 1,191 hospitals, 837 clinics and 652 doctors' offices.[6]

The 1,191 hospitals identified as abortion providers in 1985 represented 21 percent of the nation's 5,732 short-term general hospitals (23 percent when Catholic hospitals are excluded).[7] However, this total was less than the number of hospitals (1,393) that reported to the American Hospital Association (AHA) in 1986 that they had abortion facilities. Previous research has suggested that the AHA figures are probably inflated. The AGI has twice compared its list of hospitals providing abortions against those identified by the AHA and sent hospitals listed by the AHA but unconfirmed by the AGI a special questionnaire: In 1978, only 28 of the 71 hospitals responding reported that they provide abortion services; in 1980, only eight of 22 acknowledged doing abortions.[8] The number of hospitals identified by the AGI as providing abortions peaked in 1977 at 1,654; since then, there has been a general decline in the number of confirmed hospital-based abortion providers.[9] In this research note, we take a closer look at AHA data to assess more completely the availability of hospital-based abortion facilities in the United States.

### Methodology

We propose to examine the availability of abortion facilities by means of an index based on the presence of obstetric facilities, which is taken as a measure of a hospital's capability to perform abortions. Abortion services, after all, utilize hospital obstetric facilities and involve physicians specializing in obstetrics and gynecology. Most ob-gyn residency programs offer training in abortion techniques,[10] and more than eight in 10 ob-gyns favor abortion under certain conditions, a percentage that has remained unchanged since 1971.[11] The obvious delivery pattern, then, unless other variables intervene, would be for hospitals that have obstetric facilities to also make abortion services available on the premises.

Data were collected from the 1986 *AHA Guide*,*[12] which lists every registered and nonregistered hospital in the United States and "associated areas," as annually compiled by the AHA. The guide gives information on 13 accreditation programs, 54 types of services offered, type of institutional control and various census data for each hospital. Information about 6,887 hospitals was hand-coded from the *AHA Guide*.

Summaries of these data are provided in an annual companion publication called *Hospital Statistics*.†[13] However, this source was inadequate for our research purposes; although it gives separate summaries of how many hospitals, by state and region, provide abortion facilities and obstetric facilities, there are no cross-tabulations showing the interrelationship between these two types of facilities. In addition, the data on facility codes included in *Hospital Statistics* are based on only those 6,304

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*Pages A10–A275 contain a listing of hospitals, by state, according to accreditation programs, facilities and various census data.

†For the percentage of hospitals with abortion facilities, by state, see reference 13, p. 191, Table 12B.

hospitals that "report" service data, not on the entire universe of U.S. hospitals.*

The index described here is based on hospitals that offer three categories of services—abortion services only, obstetric services only or both types of services. From this total number, we derived the percentage of hospitals with reproductive health services that offered abortions (that is, the first and third categories divided by all three). Very few hospitals perform abortions but do not do obstetrics; their inclusion, therefore, adds only a minor bias to what is essentially an index showing the percentage of hospitals with obstetric facilities that also have abortion facilities.

**Table 1. Number of U.S. hospitals offering abortion services, obstetric services or both, and percentage of hospitals with any such services that offer abortions, by type of hospital, 1986**

| Type of hospital | Total | Type of abortion/obstetric service | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Any | Abortion only | Obstetric only | Both | % offering abortion | None | No data reported |
| **Total** | **6,887** | **3,752** | **218** | **2,456** | **1,078** | **34.5** | **2,017** | **1,118** |
| **Government** | | | | | | | | |
| Federal* | 344 | 132 | 1 | 110 | 21 | 16.7 | 182 | 30 |
| Nonfederal | 1.945 | 980 | 44 | 697 | 239 | 28.9 | 612 | 353 |
| State | 411 | 55 | 6 | 19 | 30 | 65.5 | 256 | 100 |
| County only | 631 | 379 | 14 | 291 | 74 | 23.2 | 152 | 100 |
| City only | 240 | 160 | 5 | 114 | 41 | 28.8 | 49 | 31 |
| City-county | 49 | 33 | 4 | 17 | 12 | 48.5 | 11 | 5 |
| Hospital district or authority | 614 | 353 | 15 | 256 | 82 | 27.5 | 144 | 117 |
| **Nongovernment** | | | | | | | | |
| Not-for-profit | 3.531 | 2,350 | 123 | 1.482 | 745 | 36.9 | 845 | 336 |
| Church-operated | 703 | 476 | 3 | 446 | 27 | 6.3 | 170 | 57 |
| Other | 2.828 | 1.874 | 120 | 1.036 | 718 | 44.7 | 675 | 279 |
| For-profit† | 1.059 | 289 | 50 | 166 | 73 | 42.6 | 376 | 394 |
| Osteopathic‡ | 8 | 1 | 0 | 1 | 0 | 0.0 | 2 | 5 |

*Includes facilities operated by the Air Force, Army, Navy, Public Health Service (including Indian Service), Veterans Administration and Department of Justice, as well as other federal hospitals.

†Includes individual, partnership and corporation facilities.

‡Includes church-operated facilities, other not-for-profit facilities and individual, partnership and corporation for-profit hospitals, as well as other private facilities.

## Results

As Table 1 shows, only 35 percent of the 3,752 hospitals with the capability of doing abortions are providing that service: Six percent do abortions but not obstetrics, while nearly five times as many (29 percent) offer both abortions and obstetric care. The other 65 percent have obstetric facilities but offer no abortion services.

Hospitals operated by nongovernmental, nonsectarian, not-for-profit governing boards are somewhat more inclined than average to provide abortion services (45 percent do so), while church-operated hospitals are far less likely to do so (six percent). In contrast, 94 percent of church-operated facilities offer obstetrics but do not perform abortions. State-controlled hospitals are primarily mental health facilities, and thus typically provide neither service. Virtually all federal hospitals serve either the armed services or the Veterans Administration; such facilities rarely perform abortions (17 percent of those that have obstetric-related services).

These general patterns parallel those seen in other data from the AHA and the AGI. For example, while 22 percent of the 6,304 hospitals reporting service data to the AHA said that they had abortion facilities, only seven percent of federal hospitals reported providing abortions.[14] Likewise, AGI data for 1985 demonstrate the predominance of private, nonsectarian hospitals in abortion provision: Of 1,191 confirmed hospital providers of abortion services, 876 were either nonsectarian, not-for-profit private hospitals (59 percent) or proprietary hospitals (15 percent).[15]

As Table 2 illustrates, the availability of hospital-based abortion services in individual states ranges widely, from a high of 75 percent of hospitals offering obstetric-related services in Hawaii to a low of under three percent of such hospitals in South Dakota. The prevailing pattern in 38 states is for hospitals to offer obstetric but not abortion services; in only 12 states do a majority of hospitals with obstetric capability actually provide abortions. What is especially noteworthy about the latter group, however, is that nine of these states were among the 18 that had reformed their abortion laws or had enacted elective abortion statutes before the Supreme Court handed down its 1973 abortion decisions: Hawaii, New York and Washington had legislated elective abortion, and less far-reaching "reform" laws had been promulgated in Maryland, California, North Carolina, Oregon, Delaware and Virginia. The simple correlation coefficient (r) between the abortion-law status of the states and the current availability of abortion services (when the 18 states that had passed some sort of reform or repeal of their abortion laws are coded as "1" and the other 32 states are coded as "0") is 0.556, which means that 31 percent of the variance ($r^2$) among the 50 states in the availability of hospital-based abortion facilities is explained by this single factor.

The data in Table 3 (page 84) show that there is a relationship between city size and the availability of hospital-based abortion facilities, which is consistent with past findings of disparities in abortion rates, even among metropolitan areas. The 55 cities included in the table are subdivided into three population groups. In six cities with one million or more people, on average, 74 percent of hospitals with the capability of providing abortions do so, and in half of these cities the vast majority of hospitals do so. Top-ranked is New York City, where 84 percent of relevant hospitals offer abortion services, after which come Los Angeles 82 percent) and Detroit (80 percent). Only in Chicago do fewer than 60 percent of the hospitals offer abortions.

In the 16 U.S. cities with populations of between 500,000 and one million, the percentage falls to 61, although in the majority of these cities, at least half of the hospitals with either obstetrics or abortion fa-

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*There is a minor discrepancy between the two AHA data sources. To illustrate, the listing of Oregon hospitals in the *AHA Guide* shows that three do abortions only, 23 offer obstetrics only, 30 have both services, 13 have neither and 12 report no data on such services, for a total of 81 hospitals (as shown in Table 2 of the *AHA Guide*). But *Hospital Statistics* reports a total of 82 hospitals for Oregon. Because *Hospital Statistics* is published later than the *AHA Guide*, any additions from hospitals that completed their surveys after the due date or any subtractions as a result of mergers of separate hospitals would be reflected in the summary statistics, but not in the original listing by state. For 25 states, our count of total hospitals shown in the *AHA Guide* is identical to the count given in *Hospital Statistics*. For the other 25, the state-by-state deviation from the number of hospitals listed in the *AHA Guide* ranged from five fewer to two more, with a net overall difference of 32 facilities.

cilities offer abortion services. The cities in which hospitals are most likely to do so are San Francisco (91 percent), Cleveland (82 percent) and Baltimore, Boston and Indianapolis (80 percent each); in six cities (Phoenix, San Antonio, Columbus, Dallas, New Orleans and Memphis), fewer than half of hospitals with such facilities actually offer abortion services.

In the 33 cities with populations ranging from 250,000 to 500,000, a bare majority (52 percent) of hospitals with either type of service offer abortion services; the majority of hospitals in many of these cities offer obstetric services but not abortions. In four (Charlotte, Norfolk, Tampa and Virginia Beach), all hospitals that might be expected to offer abortion services do so, as do 80 percent or more in Albuquerque, Honolulu, El Paso and Sacramento. In contrast, the proportion is 25 percent or fewer in Austin, Tucson, Wichita, Oklahoma City, St. Louis and Omaha.

The overall 55-city level of 61 percent is about double the rate for all 50 states. A comparison of Tables 2 and 3 also reveals that in all but seven of these 55 cities, the percentage of hospital-based abortion facilities was higher than the percentage for the states within which they are located, the exceptions being St. Louis, Pittsburgh, Tucson, Oakland, Buffalo, Omaha and Newark. These data confirm the results of previous AGI surveys showing that there are fewer hospitals in nonmetropolitan areas performing abortions than there are in metropolitan areas: Of 5,538 short-term non-Catholic hospitals surveyed in 1978, 45 percent of those in metropolitan areas were providers, compared to only 14 percent in nonmetropolitan areas.[16]

The correlation coefficient (r) for the association between the percentage of hospitals with abortion facilities in each state and the 1985 abortion rate (abortions per 1,000 women aged 15–44)[17] by state is 0.715; the value of r for the index of abortion availability and the state 1982 resident abortion rates (also per 1,000 women aged 15–44)[18] is 0.789. Thus, the index explains 51 percent of the variance ($r^2$) in the abortion occurrence rate and 62 percent of the variance in the resident abortion rate. By either measure, there is a strong relationship between state abortion rates and the existence of abortion facilities in hospitals.

**Table 2. Number of U.S. hospitals offering abortion services, obstetric services or both, and percentage of hospitals with any such services that offer abortions, by state**

| State | Total | Type of abortion/obstetric service | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Any | Abortion only | Obstetric only | Both | % offering abortion | None | No data reported |
| **Total** | **6,887** | **3,752** | **218** | **2,456** | **1,078** | **34.5** | **2,017** | **1,118** |
| Hawaii | 26 | 16 | 3 | 4 | 9 | 75.0 | 7 | 3 |
| New York | 332 | 174 | 16 | 48 | 110 | 72.4 | 93 | 65 |
| Maryland | 85 | 42 | 7 | 12 | 23 | 71.4 | 26 | 17 |
| New Jersey | 128 | 71 | 6 | 22 | 43 | 69.0 | 40 | 17 |
| Connecticut | 65 | 32 | 0 | 10 | 22 | 68.8 | 28 | 5 |
| California | 574 | 300 | 43 | 106 | 151 | 64.7 | 121 | 153 |
| North Carolina | 160 | 106 | 10 | 38 | 58 | 64.2 | 48 | 6 |
| Massachusetts | 177 | 66 | 11 | 26 | 29 | 60.6 | 93 | 18 |
| Oregon | 81 | 56 | 3 | 23 | 30 | 58.9 | 13 | 12 |
| Washington | 120 | 68 | 10 | 29 | 29 | 57.4 | 26 | 26 |
| Delaware | 13 | 7 | 0 | 3 | 4 | 57.1 | 5 | 1 |
| Virginia | 138 | 66 | 5 | 32 | 29 | 51.5 | 35 | 37 |
| Maine | 46 | 36 | 2 | 19 | 15 | 47.2 | 9 | 1 |
| Nevada | 29 | 13 | 1 | 7 | 5 | 46.2 | 5 | 11 |
| Alaska | 27 | 22 | 4 | 12 | 6 | 45.5 | 4 | 1 |
| Florida | 267 | 104 | 13 | 57 | 34 | 45.2 | 80 | 83 |
| Colorado | 99 | 70 | 5 | 40 | 25 | 42.9 | 18 | 11 |
| Pennsylvania | 305 | 177 | 10 | 107 | 60 | 39.5 | 105 | 23 |
| South Carolina | 89 | 49 | 5 | 30 | 14 | 38.8 | 35 | 5 |
| Vermont | 19 | 13 | 0 | 8 | 5 | 38.5 | 4 | 2 |
| Arizona | 85 | 48 | 3 | 30 | 15 | 37.5 | 20 | 17 |
| New Mexico | 57 | 35 | 1 | 22 | 12 | 37.1 | 14 | 8 |
| New Hampshire | 36 | 27 | 1 | 17 | 9 | 37.0 | 7 | 2 |
| Georgia | 198 | 91 | 5 | 61 | 25 | 33.0 | 58 | 49 |
| Michigan | 226 | 141 | 8 | 96 | 37 | 31.9 | 65 | 20 |
| Arkansas | 99 | 39 | 2 | 29 | 8 | 25.6 | 34 | 26 |
| Utah | 42 | 28 | 1 | 21 | 6 | 25.0 | 8 | 6 |
| Kansas | 166 | 68 | 2 | 52 | 14 | 23.5 | 59 | 39 |
| Wyoming | 32 | 22 | 0 | 17 | 5 | 22.7 | 8 | 2 |
| Rhode Island | 21 | 9 | 1 | 7 | 1 | 22.2 | 11 | 1 |
| Illinois | 276 | 176 | 3 | 138 | 35 | 21.6 | 57 | 43 |
| Mississippi | 118 | 38 | 4 | 30 | 4 | 21.1 | 79 | 1 |
| Ohio | 233 | 140 | 3 | 110 | 27 | 21.4 | 75 | 18 |
| Wisconsin | 159 | 123 | 4 | 97 | 22 | 21.1 | 33 | 3 |
| Texas | 562 | 258 | 11 | 204 | 43 | 20.9 | 181 | 123 |
| Tennessee | 165 | 68 | 2 | 55 | 11 | 19.1 | 64 | 33 |
| Indiana | 137 | 93 | 0 | 76 | 17 | 18.3 | 21 | 23 |
| Iowa | 139 | 119 | 1 | 98 | 20 | 17.6 | 16 | 4 |
| West Virginia | 72 | 40 | 0 | 33 | 7 | 17.5 | 18 | 14 |
| Minnesota | 179 | 115 | 3 | 97 | 15 | 15.7 | 44 | 20 |
| Idaho | 52 | 28 | 1 | 24 | 3 | 14.3 | 16 | 8 |
| Missouri | 172 | 112 | 2 | 97 | 13 | 13.4 | 59 | 1 |
| Oklahoma | 143 | 70 | 2 | 61 | 7 | 12.9 | 48 | 25 |
| Alabama | 145 | 70 | 0 | 63 | 7 | 10.0 | 46 | 29 |
| Montana | 67 | 51 | 1 | 46 | 4 | 9.8 | 16 | 0 |
| Nebraska | 109 | 51 | 0 | 47 | 4 | 7.8 | 33 | 25 |
| Kentucky | 120 | 65 | 2 | 61 | 2 | 6.2 | 34 | 21 |
| North Dakota | 59 | 47 | 0 | 45 | 2 | 4.3 | 9 | 3 |
| Louisiana | 170 | 52 | 1 | 50 | 1 | 3.8 | 61 | 57 |
| South Dakota | 68 | 40 | 0 | 39 | 1 | 2.5 | 28 | 0 |

## Conclusions

The AGI surveys point out that the majority of abortion clinics are located in standard metropolitan statistical areas and that most U.S counties (82 percent) have no known abortion providers. Our analysis shows that hospitals in large cities with the capability to offer abortions are more likely to offer such services than are hospitals in smaller cities or in nonmetropolitan areas. By implication, the lack of hospital-based abortion facilities, as well as abortion clinics, in rural and nonmetropolitan areas of the 50 states may explain the existing maldistribution of abortions in those localities, one that could be greatly remedied if hospitals in nonmetropolitan counties chose to provide abortion services.

**Table 3. Number of hospitals in 55 U.S. cities offering abortion services, obstetric services or both, and percentage of hospitals with any such services that offer abortions, by size of population**

| City | Total | Type of abortion/obstetric service | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Any | Abortion only | Obstetric only | Both | % offering abortion | None | No data reported |
| **Total** | **1,072** | **493** | **72** | **192** | **229** | **61.1** | **399** | **180** |
| **≥ 1,000,000** | **315** | **148** | **24** | **39** | **85** | **73.6** | **101** | **66** |
| New York City | 90 | 45 | 6 | 7 | 32 | 84.4 | 24 | 21 |
| Los Angeles | 44 | 17 | 4 | 3 | 10 | 82.4 | 13 | 14 |
| Detroit | 25 | 15 | 6 | 3 | 6 | 80.0 | 9 | 1 |
| Philadelphia | 50 | 26 | 3 | 8 | 15 | 69.2 | 21 | 3 |
| Houston | 44 | 12 | 2 | 4 | 6 | 66.7 | 15 | 17 |
| Chicago | 62 | 33 | 3 | 14 | 16 | 57.6 | 19 | 10 |
| **500,000–1,000,000** | **302** | **145** | **24** | **57** | **64** | **60.7** | **122** | **35** |
| San Francisco | 19 | 11 | 3 | 1 | 7 | 90.9 | 6 | 2 |
| Cleveland | 20 | 11 | 2 | 2 | 7 | 81.8 | 9 | 0 |
| Baltimore | 30 | 15 | 3 | 3 | 9 | 80.0 | 9 | 6 |
| Boston | 30 | 10 | 6 | 2 | 2 | 80.0 | 16 | 4 |
| Indianapolis | 13 | 5 | 0 | 1 | 4 | 80.0 | 7 | 1 |
| San Diego | 18 | 9 | 4 | 3 | 2 | 66.7 | 7 | 2 |
| San Jose | 6 | 6 | 0 | 2 | 4 | 66.7 | 0 | 0 |
| Washington, D.C | 17 | 11 | 1 | 4 | 6 | 63.6 | 6 | 0 |
| Milwaukee | 22 | 12 | 1 | 6 | 5 | 50.0 | 10 | 0 |
| Jacksonville | 13 | 8 | 1 | 4 | 3 | 50.0 | 4 | 1 |
| Phoenix | 18 | 11 | 0 | 6 | 5 | 45.5 | 7 | 0 |
| San Antonio | 21 | 9 | 1 | 5 | 3 | 44.4 | 8 | 4 |
| Columbus, Ohio | 9 | 5 | 0 | 3 | 2 | 40.0 | 4 | 0 |
| Dallas | 28 | 10 | 1 | 6 | 3 | 40.0 | 14 | 4 |
| New Orleans | 21 | 7 | 1 | 5 | 1 | 28.6 | 5 | 9 |
| Memphis | 17 | 5 | 0 | 4 | 1 | 20.0 | 10 | 2 |
| **250,000–500,000** | **455** | **200** | **24** | **96** | **80** | **52.0** | **176** | **79** |
| Charlotte | 8 | 2 | 0 | 0 | 2 | 100.0 | 5 | 1 |
| Norfolk | 11 | 2 | 0 | 0 | 2 | 100.0 | 4 | 5 |
| Tampa | 14 | 1 | 0 | 0 | 1 | 100.0 | 4 | 9 |
| Virginia Beach | 3 | 1 | 0 | 0 | 1 | 100.0 | 1 | 1 |
| Albuquerque | 13 | 6 | 1 | 1 | 4 | 83.3 | 7 | 0 |
| Honolulu | 10 | 6 | 2 | 1 | 3 | 83.3 | 4 | 0 |
| El Paso | 13 | 5 | 0 | 1 | 4 | 80.0 | 2 | 6 |
| Sacramento | 6 | 5 | 1 | 1 | 3 | 80.0 | 0 | 1 |
| Atlanta | 24 | 8 | 2 | 2 | 4 | 75.0 | 10 | 6 |
| Miami | 20 | 8 | 3 | 2 | 3 | 75.0 | 7 | 5 |
| Minneapolis | 13 | 8 | 1 | 2 | 5 | 75.0 | 3 | 2 |
| Denver | 20 | 11 | 3 | 3 | 5 | 72.7 | 7 | 2 |
| Seattle | 19 | 11 | 4 | 3 | 4 | 72.7 | 6 | 2 |
| Long Beach, Calif. | 11 | 7 | 0 | 2 | 5 | 71.4 | 3 | 1 |
| Portland, Oreg. | 17 | 8 | 0 | 3 | 5 | 62.5 | 4 | 5 |
| Nashville | 15 | 7 | 1 | 3 | 3 | 57.1 | 6 | 2 |
| Buffalo | 14 | 6 | 1 | 3 | 2 | 50.0 | 6 | 2 |
| Cincinnati | 20 | 6 | 0 | 3 | 3 | 50.0 | 11 | 3 |
| Newark | 6 | 6 | 1 | 3 | 2 | 50.0 | 0 | 0 |
| Oakland | 10 | 2 | 0 | 1 | 1 | 50.0 | 3 | 5 |
| Louisville | 15 | 5 | 2 | 3 | 0 | 40.0 | 5 | 5 |
| Birmingham | 16 | 8 | 0 | 5 | 3 | 37.5 | 6 | 2 |
| Pittsburgh | 27 | 8 | 0 | 5 | 3 | 37.5 | 18 | 1 |
| Kansas City, Mo. | 19 | 9 | 0 | 6 | 3 | 33.3 | 10 | 0 |
| Toledo | 7 | 6 | 1 | 4 | 1 | 33.3 | 1 | 0 |
| Tulsa | 9 | 6 | 0 | 4 | 2 | 33.3 | 2 | 1 |
| Fort Worth | 16 | 6 | 0 | 4 | 2 | 33.3 | 7 | 3 |
| Austin | 12 | 4 | 0 | 3 | 1 | 25.0 | 6 | 2 |
| Tucson | 11 | 4 | 0 | 3 | 1 | 25.0 | 4 | 3 |
| Wichita | 5 | 4 | 1 | 3 | 0 | 25.0 | 1 | 0 |
| Oklahoma City | 12 | 7 | 0 | 6 | 1 | 14.3 | 4 | 1 |
| St. Louis | 26 | 11 | 0 | 10 | 1 | 9.1 | 15 | 0 |
| Omaha | 13 | 6 | 0 | 6 | 0 | 0.0 | 4 | 3 |

Two-thirds of U.S. hospitals with obstetric units do not offer abortion services. However, two other findings presented here indicate that the situation in many parts of the country is more positive. First, in large cities, (those with 250,000 or more people), the dominant pattern is for hospitals with obstetric facilities to also perform abortions. Second, across the 50 states, a strong predictor of the availability of hospital-based abortion services is whether or not a state liberalized its abortion laws before 1973. States that legalized abortion to some degree before *Roe* v. *Wade*, it would appear, have a political culture such that today the majority of their hospitals with the service capability to perform abortions feel free to do so.

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**14.** Ibid., p. 185, Table 12A.

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**16.** S. K. Henshaw et al., "Abortion in the United States, 1978–1979," *Family Planning Perspectives*, **13:**14, 1981.

**17.** S. K. Henshaw et al., 1987, op. cit. (see reference 2), pp. 65 and 66.

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# Research Note

## Teenage Abortion, Birth and Pregnancy Statistics: An Update

*By Stanley K. Henshaw and Jennifer Van Vort*

### Background and Methods

This research note presents national and state-level statistics on numbers of teenage pregnancies and on pregnancy outcomes for 1985, the most recent year for which the information is available.*

The information on births comes from the U.S. National Center for Health Statistics (NCHS), which compiles data from state vital registration systems (birth certificates). The abortion data are based on a survey conducted in 1986 by The Alan Guttmacher Institute (AGI) of all known abortion providers in the country; the survey produced counts of the number of abortions performed nationally and in each state in 1985. Data compiled by the Centers for Disease Control (CDC) and the state health departments were used to estimate the number of abortions obtained by residents of each state and the number obtained by teenagers. It was assumed that women who obtained abortions out of state and those whose abortions were not reported to state health departments were similar in age to women who obtained in-state abortions and whose abortions were reported. The exact procedures used to make the estimates are described elsewhere.[1]

The national abortion rates and birthrates are based on population estimates published by the Census Bureau.[2] The population estimates used to calculate state rates were obtained by interpolation between the 1980 census results and estimates for 1987 purchased from Market Statistics, a company that specializes in population projections. The state population estimates were adjusted to sum to the Census Bureau's national estimates.

Most of the statistics presented here and in other publications on teenage pregnancy record the age at the time of the pregnancy outcome rather than the age at which the pregnancy occurred. For example, most of the women who give birth at age 20 become pregnant while age 19; such births should be counted as teenage pregnancies. Nevertheless, since other researchers have used age at outcome to calculate teenage pregnancies and because it would be impractical to adjust the data for all 50 states, the abortion, birth and most of the pregnancy rates shown here are calculated based on age at outcome. The pregnancy rates include the estimated number of miscarriages.† Pregnancy rates excluding miscarriages may be obtained simply by adding the birthrates and abortion rates.

The rates shown here may vary from those published elsewhere because of differences in the estimation of miscarriages and in the estimation of population size. In addition, the numbers of births reported by state health departments may differ from the numbers reported by the NCHS, because NCHS figures include births that occurred outside the mother's state of residence. The numbers of abortions reported by state health departments may also vary from the numbers obtained by the AGI survey of providers. Because of the degree of uncertainty in the figures, the numbers of abortions and pregnancies have been rounded to the nearest 10. Small differences in state rates should be viewed with caution because of the uncertainty in the estimates of state population sizes and numbers of abortions and, for rates based on small numbers of births or abortions, the possibility of random fluctuations.

### Findings

In 1985, 1,031,000 teenagers became pregnant; of these, 31,000 were younger than 15. The pregnancy outcomes included 477,710 live births and 416,170 induced abortions; the remainder were miscarriages or stillbirths. Women 15–17 obtained 165,630 of the abortions, and 18–19-year-olds obtained 233,570 abortions. Women younger than 20 accounted for 26 percent of all abortions and 13 percent of all births.

**Table 1. Abortion, birth and pregnancy rates per 1,000 women, and abortion ratio, all by age, according to race, United States, 1985**

| Measure | Total | White | Nonwhite |
|---|---|---|---|
| **Abortion rate** | | | |
| <15 | 9.1 | 5.0 | 27.0 |
| 15–19 | 43.8 | 37.8 | 71.1 |
| 15–17 | 30.7 | 25.7 | 53.2 |
| 18–19 | 63.0 | 55.4 | 97.1 |
| **Birthrate** | | | |
| <15 | 5.5 | 2.7 | 17.6 |
| 15–19 | 51.3 | 42.8 | 89.7 |
| 15–17 | 31.1 | 24.0 | 62.9 |
| 18–19 | 80.8 | 70.1 | 128.7 |
| **Pregnancy rate** | | | |
| <15 | 16.6 | 8.8 | 50.8 |
| 15–19 | 109.8 | 92.9 | 185.8 |
| 15–17 | 71.1 | 57.1 | 134.0 |
| 18–19 | 166.2 | 145.1 | 261.3 |
| **Abortion ratio*** | | | |
| <15 | 45.6 | 46.0 | 45.5 |
| <20 | 42.1 | 42.3 | 41.7 |
| 15–17 | 43.2 | 44.5 | 40.6 |
| 18–19 | 41.0 | 40.6 | 42.1 |

*The denominator is number of abortions plus live births six months later (to match times of conception for pregnancies ending in births and pregnancies ending in abortions), both adjusted to age of woman at time of conception.

Note: In this and subsequent tables, pregnancy rates include estimated number of pregnancies ending in miscarriage and stillbirths.

Sources: **Number of abortions**—AGI provider survey; age distritution and other characteristics: CDC, unpublished data (joint distributions were adjusted by an iterative procedure to the age and race distributions estimated by the AGI). **Number of women**—see reference 2, Table 2. **Number of births**—National Center for Health Statistics (NCHS), "Advance Report of Final Natality Statistics, 1985," *Monthly Vital Statistics Report*, Vol. 36, No. 4, Supplement, 1987; and ——, "Advance Report of Final Natality Statistics, 1986," *Monthly Vital Statistics Report*, Vol. 37, No. 3, Supplement, 1988.

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*For more detailed information on teenage pregnancy by age, race and state and an analysis of teenage pregnancy prevention initiatives by state governments, see reference 8.

†A model developed by John Bongaarts and Christopher Tietze of the Population Council was used to estimate miscarriages as equal to 20 percent of the births plus 10 percent of the abortions.

**Table 2. Abortion, birth and pregnancy rates per 1,000 women aged 15–19, by race, 1977–1985**

| Measure | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 |
|---|---|---|---|---|---|---|---|---|---|
| **All races** | | | | | | | | | |
| Abortion rate | 37.5 | 39.7 | 42.4 | 42.9 | 43.3 | 42.9 | 43.5 | 43.2 | 43.8 |
| Birthrate | 52.8 | 51.5 | 52.3 | 53.3 | 52.7 | 52.6 | 51.7 | 50.9 | 51.3 |
| Pregnancy rate by age at outcome | 104.6 | 105.4 | 109.4 | 111.2 | 110.8 | 110.3 | 109.9 | 108.6 | 109.8 |
| Pregnancy rate by age at conception* | 119.3 | 122.5 | 127.2 | 127.6 | 128.5 | 127.4 | 125.9 | 126.9 | 127.5 |
| **White** | | | | | | | | | |
| Abortion rate | u | 34.9 | 38.3 | 38.3 | 38.5 | 38.1 | 38.2 | 37.9 | 37.8 |
| Birthrate | 44.1 | 42.9 | 43.7 | 45.0 | 44.7 | 44.5 | 43.6 | 42.5 | 42.8 |
| Pregnancy rate by age at outcome | u | 89.9 | 94.6 | 96.1 | 96.0 | 95.2 | 94.3 | 92.7 | 92.9 |
| **Nonwhite** | | | | | | | | | |
| Abortion rate | u | 64.7 | 63.1 | 66.0 | 66.1 | 65.5 | 67.9 | 67.1 | 71.1 |
| Birthrate | 99.5 | 96.0 | 96.5 | 94.7 | 91.3 | 90.7 | 89.3 | 89.0 | 89.7 |
| Pregnancy rate by age at outcome | u | 186.3 | 185.2 | 186.3 | 182.3 | 180.9 | 181.9 | 180.6 | 185.8 |

*Based on births six months later than abortions to match time of conception for births and abortions; ages of women reduced by nine months for births and three months for abortions.

Note: u=data unavailable.

Sources: **1977–1983**—S. K. Henshaw, "Characteristics of U.S. Women Having Abortions, 1982–1983," *Family Planning Perspectives*, **19**:1, 1987, Table 5. **1984–1985**—number of abortions and number of women: see sources for Table 1; number of births: NCHS, "Advance Report of Final Natality Statistics, 1984," *Monthly Vital Statistics Report*, Vol. 35, No. 4, Supplement, 1986; and ——, "Advance Report of Final Natality Statistics, 1985," *Monthly Vital Statistics Report*, Vol. 36, No. 4, Supplement, 1987.

As is shown in Table 1 (page 85), the abortion rate for adolescents aged 15–19 was 44 per 1,000, meaning that about 4.4 percent of all women in the age-group had an abortion in 1985. The abortion rate was 31 per 1,000 among adolescents 15–17 and rose to 63 among those 18–19. After peaking at age 18, the rate dropped slowly until age 21 and then fell more rapidly with increasing age, as shown below:

| Age | Rate | Age* | Rate |
|---|---|---|---|
| 15 | 17 | 20 | 60 |
| 16 | 31 | 21 | 58 |
| 17 | 45 | 22 | 54 |
| 18 | 64 | 23 | 48 |
| 19 | 62 | 24 | 42 |

The abortion rate shown for 18-year-olds may be somewhat higher than the reality, and that for 17-year-olds may be biased downwards; believing that restrictions may apply to minors, some 17-year-olds may have given their age as 18.

The consistent increase in the abortion rate up to age 18 is due largely to the increase with age in the proportion of teenagers who are sexually active. An examination of the abortion rates among sexually active teenagers reveals only small differences among 16–18-year-olds: At age 15, there were 87 abortions per 1,000, compared with 103 at age 16, 104 at age 17 and 110 at age 18.† The rate dropped at age 19 to 88 per 1,000 (and to 61 per 1,000 among women aged 20–24), probably because of more effective contraceptive use and higher proportions of sexually active women having planned pregnancies. Between nine and 11 percent of sexually active teenagers had an abortion in 1985.

The birthrate for all women aged 15–19 was 51 per 1,000, and the pregnancy rate was 110 per 1,000 (see Table 1). Thus, 11 percent of all women in this age-group had births, abortions or miscarriages during the year. Also shown in the table is the ratio of abortions per 100 pregnancies excluding miscarriages (i.e., per 100 live births plus abortions), adjusted to the woman's age at conception. This measure reflects the decisions made by teenagers when faced with a pregnancy. Of the adolescents who became pregnant before age 15, 46 percent obtained an abortion and 54 percent carried the pregnancy to term. The proportions choosing abortion, which have changed little in recent years, were only slightly lower among older teenagers: 43 percent of those 15–17 and 41 percent of those 18–19.

Six percent of teenagers having abortions were married; the abortion rate for married women 15–19 was 27, compared with 44 for unmarried women the same age (not shown). (These figures are for 1984, the latest year for which they could be estimated accurately.) A majority of the married teenagers having abortions already had children.

Calculations from the NCHS data show that at 1985 rates of birth and abortion, nine percent of young women will have had at least one abortion by their 18th birthday and nine percent will have had one or more births. By age 20, the figures are 18 percent and 20 percent, respectively. Because some of the women will have had more than one abortion or birth, a cohort of 1,000 adolescents will have had 227 abortions and 261 births by age 20.

The pregnancy rate among nonwhite teenagers aged 15–19 was twice as high as that among similar white teenagers. The higher pregnancy rate was reflected in both a higher birthrate and a higher abortion rate. Once pregnant, however, about 42 percent of both white and nonwhite teenagers ended their pregnancies by abortion.

The race contrast was espectially great for girls under age 15. The abortion rate among nonwhites was 5.4 times that among whites, and the birthrate was 6.5 times as high. In 1985, nonwhites accounted for 55 percent of the abortions and 60 percent of the births to women under 15.

Information on the proportion of abortions obtained by Hispanic women is available from a national survey of abortion patients conducted in 1987. If the proportion was similar in 1985, about 39,000 Hispanics aged 15–19 obtained abortions in that year, for an abortion rate of 50 (not shown). The Hispanic rate was about 32 percent higher than the abortion rate of whites of the same age, but almost 30 percent lower than that of nonwhites. Among Hispanics, the proportion of abortions obtained by teenagers (20 percent) was lower than the 26 percent among American women generally. Hispanics aged 15–19 had approximately 65,500 births in 1985,‡ for a birthrate of 86 per 1,000, which was close to the nonwhite rate of 90.

The trends in abortion, birth and pregnancy rates by race for women 15–19 are shown in Table 2. The abortion rate remained stable at 43–44 per 1,000 women between 1980 and 1985. The birthrate fell slightly after 1980, from 53 per 1,000 to 51 per 1,000. Falling adolescent fertility rates

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*Age distribution of abortions to women aged 20–24 was estimated from a special tabulation of a magnetic tape containing data compiled by NCHS on abortions in 13 states in 1983.

†The proportion sexually active was taken from: W. F. Pratt et al., "Understanding U.S. Fertility: Findings from the National Survey of Family Growth, Cycle III," *Population Bulletin*, Vol. 39, No. 5, 1984.

‡To calculate birthrates for Hispanics, the 60,262 births to women aged 15–19 reported by S. J. Ventura ("Births of Hispanic Parentage, 1985," *Monthly Vital Statistics Report*, Vol. 36, No. 11, Supplement, 1988) were inflated to 65,502 because the 23 states in that report contain about 92 percent of the Hispanic population. The population of Hispanic women 15–19 was estimated from: U.S. Bureau of the Census, "The Hispanic Population in the United States: March 1985," *Current Population Reports*, Series P-20, No. 422, 1988, Table 6.

**Table 3. Number of abortions, births and pregnancies, and pregnancy, birth and abortion rates, all by age, according to state, 1985**

| State | No. of abortions | | No. of births | | No. of pregnancies | | Abortion rate | | | Birthrate | | | Pregnancy rate | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | <15 | 15–19 | <15 | 15–19 | <15 | 15–19 | 15–19 | 15–17 | 18–19 | 15–19 | 15–17 | 18–19 | 15–19 | 15–17 | 18–19 |
| **U.S.** | **16,970** | **399,200** | **10,220** | **467,485** | **30,030** | **1,000,110** | **44** | **31** | **63** | **51** | **31** | **81** | **110** | **71** | **166** |
| Ala.* | 330 | 5,300 | 298 | 10,404 | 720 | 18,310 | 32 | 25 | 43 | 64 | 41 | 97 | 112 | 77 | 164 |
| Alaska* | 30 | 970 | 13 | 1,099 | 50 | 2,390 | 59 | 41 | 89 | 66 | 30 | 127 | 144 | 81 | 250 |
| Ariz. | 180 | 5,210 | 117 | 8,039 | 340 | 15,380 | 43 | 24 | 71 | 67 | 39 | 107 | 128 | 73 | 207 |
| Ark.† | 140 | 2,100 | 178 | 6,578 | 370 | 10,200 | 23 | 15 | 34 | 72 | 44 | 115 | 111 | 69 | 176 |
| Calif.* | 2,280 | 74,520 | 890 | 50,400 | 3,580 | 142,450 | 79 | 55 | 114 | 54 | 32 | 85 | 151 | 98 | 228 |
| Colo. | 170 | 6,260 | 90 | 5,636 | 300 | 13,650 | 51 | 40 | 68 | 46 | 27 | 72 | 112 | 76 | 161 |
| Conn. | 220 | 6,160 | 102 | 3,948 | 360 | 11,510 | 52 | 39 | 72 | 33 | 19 | 55 | 96 | 66 | 145 |
| Del.* | 50 | 950 | 33 | 1,285 | 90 | 2,590 | 37 | 29 | 49 | 50 | 31 | 76 | 101 | 69 | 144 |
| D.C.† | 220 | 2,690 | 64 | 1,697 | 320 | 5,000 | 113 | 95 | 133 | 72 | 53 | 91 | 211 | 169 | 255 |
| Fla.* | 1,130 | 19,560 | 641 | 22,133 | 2,010 | 48,080 | 51 | 39 | 71 | 58 | 36 | 91 | 126 | 86 | 187 |
| Ga. | 640 | 10,170 | 467 | 16,219 | 1,260 | 30,650 | 44 | 33 | 59 | 70 | 45 | 107 | 132 | 90 | 194 |
| Hawaii | 80 | 2,280 | 8 | 1,788 | 100 | 4,650 | 61 | 41 | 93 | 48 | 23 | 87 | 125 | 72 | 207 |
| Idaho | 20 | 840 | 18 | 1,826 | 40 | 3,120 | 21 | 12 | 33 | 46 | 24 | 75 | 78 | 42 | 127 |
| Ill.* | 710 | 16,770 | 586 | 22,060 | 1,480 | 44,920 | 38 | 25 | 58 | 50 | 32 | 78 | 103 | 66 | 157 |
| Ind. | 310 | 5,280 | 178 | 11,238 | 550 | 19,290 | 24 | 14 | 37 | 51 | 30 | 80 | 87 | 52 | 137 |
| Iowa* | 110 | 2,880 | 54 | 3,783 | 190 | 7,710 | 25 | 18 | 35 | 33 | 18 | 54 | 67 | 41 | 104 |
| Kans. | 90 | 2,140 | 73 | 4,449 | 190 | 7,690 | 23 | 19 | 29 | 49 | 27 | 79 | 84 | 54 | 126 |
| Ky.* | 130 | 2,360 | 189 | 9,109 | 370 | 13,530 | 16 | 12 | 22 | 62 | 39 | 95 | 92 | 60 | 138 |
| La. | 230 | 4,320 | 377 | 13,713 | 710 | 21,210 | 22 | 13 | 35 | 71 | 46 | 106 | 109 | 70 | 166 |
| Maine | 40 | 1,620 | 18 | 1,962 | 70 | 4,140 | 36 | 25 | 53 | 44 | 22 | 76 | 92 | 55 | 150 |
| Md. | 620 | 10,010 | 232 | 8,021 | 960 | 20,640 | 59 | 42 | 85 | 47 | 28 | 76 | 121 | 80 | 185 |
| Mass.† | 260 | 10,210 | 113 | 6,858 | 420 | 19,460 | 45 | 33 | 62 | 30 | 17 | 48 | 86 | 57 | 126 |
| Mich.† | 970 | 18,650 | 352 | 16,280 | 1,490 | 40,050 | 50 | 32 | 77 | 44 | 26 | 70 | 107 | 67 | 168 |
| Minn. | 110 | 4,050 | 56 | 5,030 | 190 | 10,490 | 24 | 15 | 37 | 30 | 15 | 50 | 62 | 35 | 100 |
| Miss. | 140 | 2,150 | 351 | 8,688 | 580 | 12,790 | 19 | 15 | 25 | 77 | 54 | 110 | 113 | 81 | 160 |
| Mo. | 280 | 5,550 | 209 | 10,179 | 560 | 18,320 | 29 | 20 | 41 | 53 | 31 | 84 | 95 | 59 | 146 |
| Mont. | 30 | 890 | 11 | 1,324 | 50 | 2,570 | 28 | 19 | 42 | 42 | 22 | 72 | 82 | 48 | 132 |
| Nebr. | 50 | 1,690 | 23 | 2,299 | 80 | 4,620 | 27 | 20 | 37 | 37 | 21 | 59 | 75 | 48 | 112 |
| Nev. | 60 | 1,960 | 34 | 1,824 | 110 | 4,340 | 57 | 37 | 87 | 53 | 29 | 89 | 125 | 75 | 202 |
| N.H.* | 40 | 1,780 | 11 | 1,266 | 60 | 3,480 | 46 | 33 | 62 | 32 | 15 | 56 | 89 | 55 | 136 |
| N.J.† | 990 | 17,490 | 248 | 10,075 | 1,390 | 31,330 | 63 | 43 | 96 | 36 | 22 | 60 | 113 | 73 | 179 |
| N.Mex. | 60 | 1,790 | 63 | 4,232 | 140 | 7,050 | 30 | 22 | 41 | 70 | 41 | 115 | 116 | 73 | 183 |
| N.Y. | 1,700 | 41,630 | 501 | 25,492 | 2,470 | 76,380 | 64 | 44 | 93 | 39 | 23 | 63 | 117 | 76 | 178 |
| N.C. | 560 | 9,920 | 333 | 13,989 | 1,020 | 27,700 | 41 | 32 | 52 | 57 | 36 | 87 | 114 | 79 | 162 |
| N.Dak. | 10 | 470 | 8 | 906 | 20 | 1,600 | 17 | 11 | 26 | 34 | 17 | 57 | 60 | 32 | 97 |
| Ohio | 410 | 13,590 | 444 | 20,928 | 980 | 40,060 | 33 | 22 | 49 | 50 | 29 | 81 | 96 | 59 | 150 |
| Okla.* | 160 | 3,600 | 150 | 8,267 | 360 | 13,880 | 29 | 22 | 40 | 67 | 42 | 103 | 113 | 74 | 168 |
| Oreg. | 140 | 4,030 | 42 | 4,143 | 200 | 9,400 | 41 | 30 | 56 | 42 | 23 | 69 | 95 | 61 | 145 |
| Pa. | 650 | 15,520 | 360 | 18,165 | 1,150 | 38,870 | 35 | 25 | 48 | 41 | 25 | 64 | 87 | 58 | 130 |
| R.I. | 40 | 1,500 | 22 | 1,392 | 70 | 3,320 | 40 | 22 | 63 | 37 | 21 | 58 | 89 | 50 | 139 |
| S.C. | 160 | 3,610 | 279 | 8,530 | 510 | 14,210 | 26 | 20 | 34 | 61 | 40 | 92 | 102 | 70 | 146 |
| S.Dak. | 20 | 510 | 19 | 1,213 | 40 | 2,020 | 18 | 14 | 23 | 42 | 22 | 69 | 70 | 42 | 103 |
| Tenn. | 300 | 5,490 | 294 | 11,123 | 680 | 19,390 | 29 | 21 | 41 | 60 | 38 | 91 | 104 | 68 | 155 |
| Tex.* | 1,020 | 24,630 | 1,079 | 45,950 | 2,420 | 82,230 | 39 | 26 | 58 | 73 | 47 | 111 | 131 | 86 | 196 |
| Utah | 30 | 1,000 | 26 | 3,300 | 60 | 5,060 | 15 | 10 | 21 | 49 | 28 | 75 | 75 | 44 | 114 |
| Vt. | 20 | 800 | 5 | 780 | 30 | 1,820 | 36 | 28 | 46 | 35 | 19 | 55 | 82 | 53 | 117 |
| Va. | 490 | 9,790 | 256 | 10,250 | 850 | 23,070 | 45 | 33 | 63 | 47 | 28 | 75 | 106 | 69 | 159 |
| Wash. | 200 | 7,500 | 109 | 7,114 | 350 | 16,790 | 46 | 34 | 64 | 43 | 25 | 71 | 103 | 67 | 155 |
| W.Va.* | 80 | 1,400 | 63 | 4,054 | 160 | 6,400 | 19 | 14 | 27 | 55 | 32 | 89 | 87 | 54 | 136 |
| Wis.* | 230 | 5,000 | 123 | 7,374 | 400 | 14,350 | 25 | 16 | 39 | 37 | 21 | 61 | 73 | 42 | 116 |
| Wyo. | 30 | 610 | 10 | 1,073 | 50 | 1,960 | 30 | 24 | 39 | 54 | 28 | 90 | 98 | 60 | 151 |

*Abortion estimates are based on proportion of abortions obtained by women of the same age in neighboring or similar states.

†Partitioning of teenage abortions into age-groups 15–17 and 18–19 is based on proportion in neighboring states.

Note: Numbers may not sum to totals because of rounding.

Sources: **Number of abortions and population estimates**—see text. **Number of births**—NCHS, *Vital Statistics of the United States, 1985: Volume I, Natality*, U.S. Government Printing Office, Washington, D.C., 1988.

have been characteristic of all but a few other developed countries, most of which experienced a more pronounced decline between 1980 and 1985 than the small drop seen in the United States.[5]

The pregnancy rate reached its highest level (111 per 1,000) in 1980 and experienced only minor fluctuations subsequently. The pregnancy rate calculated by age at conception was higher than that by age at outcome because it includes pregnancies that ended at age 20 but were conceived at age 19. This measure of pregnancies peaked in 1981 at 129 per 1,000 women aged 15–19, declined slightly to 126 per 1,000 in 1983, and rose to 128 per 1,000 in 1985. The recent trends in pregnancies per 1,000 sexually active teenagers would be of interest, but no data on sexual activity exist that allow accurate trend calculations. Earlier data have shown that the pregnancy rate among sexually active women declined during the 1970s, probably as a result of better contraceptive use.[6]

The abortion rates and birthrates among white teenagers followed the overall national pattern closely, with a two-point drop in the birthrate from 1980 to 1985. The pregnancy rate dropped slightly more than that among all teenagers, from 96 per 1,000 to 93. Among nonwhite teenagers, the birthrate fell more sharply, from 95 per 1,000 to 90. The pregnancy rate declined from 1980 to 1984, while the abortion rate rose slightly; both then rose sharply in 1985. (The abortion rates of nonwhites older than 20 also rose in 1985.)

Table 3 (page 87) shows numbers and rates of abortions, births and pregnancies by state. As noted in the table, the numbers of abortions obtained by teenagers were estimated for the states that do not collect such data. Where possible, the estimates were based on the proportions of abortions among teenagers in neighboring states that had data available. For Alaska and states with few neighboring states for which data were available, the nearest states thought to be similar in degree of urbanization were used. (The proportions from New York City were used in calculating estimates for the District of Columbia.) Whether the number of abortions obtained by teenagers was provided by the state or was estimated, those states having a high abortion rate among the adult population had a high rate among teenagers and those with a low adult rate had a low teenage rate. This correlation gives validity to the estimating procedure, but some uncertainty is inevitable when the number of abortions obtained by teenagers was not available from the state itself.

Pregnancy, birth and abortion rates were especially high in the District of Columbia, which is to be expected in a central city area with a high concentration of nonwhites. When the adolescent birthrate in the District is adjusted for race, it is well below the national average for both whites and nonwhites (not shown).

Among the states, California had the highest abortion rate for 15–19-year-olds, followed by New York, New Jersey, Hawaii, Maryland and Alaska. The lowest rates were found in Utah, Kentucky, North Dakota and South Dakota. In general, the least urbanized states tended to have the lowest rates, probably partly because women lack accessible abortion services.[7] The lowest state rates were comparable to the rates found in other developed countries for which data are available.[8] The patterns of differences among the states were similar for all three age-groups, 15–19, 15–17 and 18–19.

Birthrates were generally high in the southern states stretching from Georgia through Arizona. The highest rates occurred in Mississippi, Texas, Arkansas, Louisiana, New Mexico and Georgia. The New England and Middle Atlantic states had below-average rates, and low rates also occurred in some Midwestern states. The states with the lowest birthrates were Massachusetts, Minnesota, New Hampshire, Connecticut and Iowa. The New England states had low birthrates because of high abortion rates, while some of the Midwestern states had low abortion rates as well as low birthrates.

The 1985 pregnancy rates for women aged 15–19 ranged from 60 per 1,000 women in North Dakota to 151 per 1,000 in California. Even North Dakota's low rate was higher than that of Canada (45 per 1,000, in 1983) and England and Wales (53, in 1984).[9] Also among the five states with the lowest pregnancy rates were Minnesota, Iowa, South Dakota and Wisconsin, and the other states with the highest rates were Alaska, Georgia, Texas and Arizona.

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## "Drawing Women into Prenatal Care"

*(Continued from page 80)*

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# Special Report

## Weighing the Evidence on the Pill and Breast Cancer

*By Jeanette H. Johnson*

**Summary**
Three new studies have found some connection between oral contraceptive use and breast cancer among women younger than 45. None of the studies find an increased risk of breast cancer among the same subgroups of women, and their results are contradictory. Consequently, a committee advising the U.S. Food and Drug Administration concluded that "the existing data do not support a change in prescribing practices by physicians or in the use of oral contraceptives by women."

One of the three studies, a U.S. hospital-based analysis of breast cancer patients, showed ever-users of the pill to have a statistically significant risk of breast cancer of 2.0 compared with never-users. The relative risk was elevated in virtually all duration-of-use categories. A significantly increased relative risk was also found among ever-users aged 30–34 and 35–39, among those who did not experience menarche until age 14 or older and among those who were parous.

A new analysis of data from the U.S. population-based Cancer and Steroid Hormone Study found no increased risk among parous women or those who had used the pill for less than eight years. However, nulliparous women who had experienced menarche prior to age 13 and had used the pill for eight or more years did have a significantly increased relative risk. Most of the increased risk was confined to women who had begun pill use as teenagers; they had a relative risk of 5.6 compared with never-users.

Researchers from Britain's Royal College of General Practitioners analyzed data on 239 cases of breast cancer that have been diagnosed since they began their study of oral contraceptive use in 1968. The results show that ever-users aged 30–34 at diagnosis had a statistically significant increased risk of 3.3 compared with never-users. Women of parity one had a relative risk of 5.9; there was no increased risk among nulliparous women or those with more than one child.

### Introduction

Since the pill first came on the market in 1960, numerous studies have been conducted to determine what effect its manipulation of the body's normal hormone profile might have on women who use this method of contraception. One of the primary areas of interest has been whether or not estrogen and progestogen—the hormones found in the pill—have any effect on cancers of the reproductive system.

Overall, the news has been more good than bad. Studies finding that oral contraceptives protect women from endometrial cancer have been as unanimous as scientific research can ever be: Women who take the pill for two years have a risk of endometrial cancer of 0.6 compared with never-users of the pill, and those who use it for four years have their relative risk reduced to about 0.4.[1] Researchers have also determined that oral contraceptives protect against ovarian cancer, the relative risk being 0.5 among women who have used the pill for four years.[2] The relationship with cervical cancer is still somewhat of a question. Some evidence exists to show that the risks of cervical dysplasia and carcinoma in situ are elevated after two or more years of pill use, but a consensus remains elusive because few if any of the studies have been free of confounding factors that might bias the results.[3] Some of the same problems with confounding factors exist in studies of the risk of invasive cervical cancer, which appears to be elevated after five years of pill use and may reach a level of 2.0 by 10 years of use.[4] Women who obtain regular Pap tests for early detection of cervical cancer rarely develop invasive disease, however.

There is a sense that medical science may have to wait quite a while—until the young women who first took the pill pass through their reproductive years—to see whether the use of oral contraceptives will affect the incidence of breast cancer. The reason is that the disease has a very long latency period and primarily strikes older women. At 30 years of age, 28 in every 100,000 U.S. women are diagnosed as having breast cancer; at age 50, the incidence is 195 in every 100,000 U.S. women, and at age 70, the number rises to 362 women in every 100,000.[5] Because oral contraceptives did not come on the market until 1960, comparatively few women now older than 60 would ever have used the pill, and women in their 50s could not have taken it early in their reproductive careers. Consequently, most studies of the relationship between the pill and breast cancer have been confined to younger women, whose risk is small and who make up only a small fraction of the breast cancer population.

Nonetheless, an increase in the risk of breast cancer among young women could signal bigger problems to come. Until recently, studies done on women younger than 45 had raised a few cautionary flags regarding the pill's relationship to breast cancer but had been generally reassuring. Researchers had looked at the risk of breast cancer by, among other factors, duration of use, use before or after a first term pregnancy, age when use began, length of time since use was initiated and formulation of pill taken. Also considered in these studies was the susceptibility of the user to an increased risk of breast cancer by virtue of family history or some other condition known to be associated with the disease, such as race, age at menarche, obesity and a history of benign breast disease. Most results were negative and the majority of researchers concluded that pill users overall had no statistically significant increased risk of breast cancer.[6] However, the research indicated that some women—those who used the pill for at least eight years or

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for several years before a first term pregnancy or before age 25—might experience an increased risk.[7]

In late 1988 and early 1989, researchers were jolted by the results of three new analyses of data for premenopausal women, all of which found some connection between the pill and breast cancer. A hospital-based study indicated that ever-users of the pill have an increased risk of breast cancer, even those who have taken oral contraceptives for fewer than three months.[8] Further results from Britain's Royal College of General Practitioners' Oral Contraception Study showed that the only women who have a significant increased risk are ever-users aged 30–34 and those who have one child at the time their breast cancer is diagnosed.[9] The third analysis, using data from the U.S. Cancer and Steroid Hormone Study, found that ever-users who are nulliparous run an increased risk of developing breast cancer, provided they experienced menarche before age 13 and have taken the pill for eight or more years.[10]

The latest figures available on pill use in the United States indicate that 32 percent of sexually active women aged 18–44 rely on this method for contraception.[11] Among sexually active women who were aged 15–44 as of 1982, 76 percent had ever used the pill; this proportion was 85 percent among women aged 25–34. The proportion of current users among sexually active women aged 15–19 was 61 percent and among those 20–24 it was 49 percent. Only 28 percent of women aged 25–29 and 13 percent of those aged 30–34 were current users of the pill; these women had relied on oral contraceptives for an average of six years. Among sexually active women who had no children, 67 percent were using the pill, as were 82 percent who had one child.[12]

Although the new analyses contradict each other and the results of many previous research inquiries, the arrival back-to-back of three studies showing positive associations is the cause of much concern. All of the studies come from well-established projects, and all of them are from sources that have published previously on the topic. Consequently, a committee advising the U.S. Food and Drug Administration (FDA) scheduled special hearings to appraise the significance of the findings.* In the end, the committee decided the findings were not definitive and recommended against any changes in prescribing practices; it also rejected the idea of adding any new warnings to the patient package insert beyond the mention already made that some studies have shown an increased risk of breast cancer in certain women.[13] However, the committee and the family planning world anxiously await the results of follow-up data from these three sources, other studies yet to be published and new studies about to get under way. Following is a summary of the three studies, the comments of the researchers who presented their results to the committee and the committee's conclusions.

## Hospital-Based Study

From 1983 to 1986, breast cancer patients aged 25–44 admitted to 16 hospitals in New York, Philadelphia, Baltimore and Boston were enrolled in a study of the association between oral contraceptives and the risk of a breast cancer diagnosis before age 45.[14] Controls from the same age-group were selected from among patients admitted for nongynecologic and nonmalignant conditions unrelated to oral contraceptive use. Specially trained nurses interviewed the 407 cases and 424 controls while they were hospitalized regarding their health, personal habits and use of medication.

Seventy-two percent of breast cancer patients and 59 percent of controls had ever used oral contraceptives. A multiple logistic regression analysis controlled for the potentially confounding effects of numerous variables, such as age, age at first term pregnancy, parity, age at menarche, family history of breast cancer, body mass, alcohol consumption and religion. Compared with never-users, ever-users were found to have a statistically significant risk of breast cancer of 2.0. The relative risk was consistently elevated for all duration-of-use categories, and was statistically significant for categories of less than three months, 1–4 years, 5–9 years and 10 or more years. The relative risk was approximately 2.0 for most of these categories but rose to 4.1 for women who had used the pill for 10 or more years.

The data were analyzed by five-year age-groups: Ever-users aged 30–34 and 35–39 were found to have significantly increased relative risks of 3.2 and 2.6, respectively. When the analysis was limited to women who had used the pill for five or more years, those aged 30–34 had a significantly increased relative risk of 3.9. There was no evidence that women exposed to the pill before age 25 incurred a higher risk relative to women who did not use it until after age 25. Pill users who had not experienced menarche until age 14 or older were at a statistically higher risk of breast cancer than comparable never-users; an increased risk among pill users who had experienced menarche before age 14 was nonsignificant.

Ever-users of the pill who were nulliparous had a relative risk of 1.6, but the finding was not statistically significant. Parous women had a significantly increased relative risk whether they had used the pill prior to or following a first term pregnancy; the risks were 2.0 and 2.6, respectively. Only two levels of parity were examined—women who had 1–2 children and those who had three or more children—and at both levels, pill users were found to have statistically significant increased risks.

## The Cash Study

In the Cancer and Steroid Hormone (CASH) Study, women whose breast cancer was diagnosed between December 1, 1980, and December 31, 1982, and who were aged 20–54 at the time of detection were ascertained through eight population-based cancer registries† maintained by the National Cancer Institute.[15] Controls from the same geographic areas as the patients were selected through random telephone dialing and were matched with patients by five-year age intervals. Premenopausal women were selected for the current analysis—2,945 patients and 2,646 controls. The data for nulliparous and for parous women were analyzed separately by whether menstruation had begun before age 13 or after, by whether the cancer diagnosis had occurred before age 45 or after and by how long pill use had lasted (fewer than four years, 4–7 years, 8–11 years or 12 years or more). Among parous women, pill use applied only to that which had occurred prior to a first full-term pregnancy.

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*The Fertility and Maternal Health Drugs Advisory Committee met on January 5, 1989, in Rockville, Md. Committee members, all present, included Barbara S. Hulka, chair of the committee and chair of the Department of Epidemiology, University of North Carolina School of Public Health, Chapel Hill; Dorothy M. Barbo, associate professor, Department of Obstetrics and Gynecology, Medical College of Pennsylvania, Philadelphia; Arthur F. Haney, director of the Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Duke University Medical Center, Durham, N.C.; Paul D. Manganiello, associate professor, Department of Maternal Health and Child Health, Dartmouth University Medical School, Hanover, N.H.; Elizabeth R. McAnarney, professor, Department of Pediatrics, University of Rochester Medical School; Paul McDonough, professor, Department of Obstetrics and Gynecology, Medical College of Georgia, Augusta; Susan A. McKay, associate professor, University of Wyoming School of Nursing, Laramie; Jennifer R. Niebyl, professor, Department of Obstetrics and Gynecology, University of Iowa, Iowa City; Subir Roy, associate professor, Department of Obstetrics and Gynecology, University of Southern California School of Medicine, Los Angeles; James J. Schlesselman, professor, Department of Preventive Medicine and Biometrics, Uniformed Services University of the Health Sciences, Bethesda; and Anne C. Wentz, professor, Department of Obstetrics and Gynecology, Vanderbilt University School of Medicine, Nashville.

†Covering the metropolitan areas of Atlanta, Detroit, San Francisco and Seattle, the states of Connecticut, Iowa and New Mexico and the four urban counties of Utah.

No increased risk was found among women who had used the pill for fewer than eight years, but the researchers found that nulliparous women who had experienced menarche before age 13 and had used the pill for 8–11 years were 2.7 times more likely to have breast cancer before age 45 than were nulliparous women who also had experienced an early menarche but had never used the pill. Women with these characteristics who had used the pill for 12 or more years had a risk of breast cancer before age 45 that was 11.8 times that of never-users. Both these findings were statistically significant. None of the findings for nulliparous women who had begun menstruating at age 13 or older and who had used the pill for eight or more years were statistically significant. The findings were also nonsignificant among parous women, regardless of age at menarche; few parous women had been long-term users of the pill, however.

To determine whether early use of oral contraceptives might have influenced the findings among their high-risk group, the researchers analyzed the relative risk of breast cancer before age 45 by whether long-term use had begun during the teenage years or at ages 20 and older. Nulliparous women with an early menarche who had begun long-term pill use as teenagers had a risk of 5.6 compared with similar never-users, and the risk was statistically significant. For those who had begun use later, the relative risk of 2.6 was of marginal significance (95 percent confidence interval, 1.0–6.9).

The researchers suggest that women who experience menarche before age 13 and remain nulliparous may be at increased risk of developing early breast cancer if they use oral contraceptives for eight years or longer. The risk appears to be greatest for those who begin taking the pill as teenagers. Because risk was not increased among all pill users and because it remained unchanged when adjusted for the tendency of physicians to examine pill users more frequently, the researchers believe that the findings may point to a promotional effect in which the pill advances the onset of breast cancer in susceptible women by a few years but does not change the level of risk among all women. The researchers also point out that the high-risk group is a very small proportion—slightly more than one percent—of breast cancer patients; only 39 of the almost 3,000 patients in the study had had breast cancer detected prior to age 45, were nulliparous, had experienced early menarche and had used the pill for eight or more years.

## The Royal College Study

Researchers from Britain's Royal College of General Practitioners began a study of oral contraceptives in 1968 with the enrollment of some 23,000 pill users and a like number of controls.[16] The study enrolled only married women or women living as married. Some 18,000 women remained in the study as of March 1985, when data on breast cancer risk among enrollees were analyzed; 239 cases of breast cancer were diagnosed during the accumulation of approximately 407,000 woman-years of data between 1968 and 1985.

The data, which were standardized for parity, social class and smoking habits, indicated that neither current users nor former users of the pill had a statistically significant increased risk of breast cancer when compared with never-users. Consequently, the two were grouped together as ever-users for most of the remaining analyses. For an examination of the risk of breast cancer by age at diagnosis, the women were categorized by five-year age-groups ranging from younger than 24 to 60–64.

Twenty-six cases of breast cancer had been diagnosed among women aged 30–34, and ever-users in this age-group were found to have a statistically significant increased risk of 3.3 compared with never-users. The relative risks in all other age-groups were nonsignificant. An analysis by parity at the time of diagnosis (0, 1, 2–3 and 4 or more children) also found one group to have a statistically significant increased risk of breast cancer—pill users with one child had a relative risk of 5.9. The results also indicated that women who had begun using the pill before age 25 had no higher risk of breast cancer than women who had begun using it at a later age.

Among all participants in the study, there was no evidence of a trend toward increased risk of breast cancer with increased duration of pill use. However, a significant trend emerged when the analysis was confined to women with one child at the time of diagnosis, and the elevation of risk began among those who had used the pill for as little as 2–3 years. An upward trend among the other group found to have an increased risk of breast cancer—women aged 30–34 at diagnosis—was present but was not significant.

An analysis of former users of the pill found a significant trend toward greater risk of breast cancer with years since the method was last used, evidence perhaps of a latency period. A statistically significant increased risk began with 4–5 years since last use and peaked at 1.9 with 10 or more years since last use. Restricting the analysis of former users to women aged 30–34 at the time of diagnosis showed a steep increase in relative risk that became significant with 6–7 years since last use and that reached a peak of 15.8 at 8–9 years. Women who had one child at the time of diagnosis experienced a similar significant trend of increasing risk with the passage of time, the risk peaking at 13.2 after 10 or more years had passed since last pill use.

Like the CASH investigators, the Royal College researchers suggest that their data can be interpreted to indicate that the pill accelerates latent cancer rather than initiates cancer. They base their speculation on two findings. Women of parity one showed a significantly increased risk after only two years of pill use, yet cancer is believed to take many more years to develop. In addition, women aged 30–34 at diagnosis had been pinpointed as a group at increased risk in an analysis of data published by the Royal College in 1981.[17] The women aged 30–34 at that time were 35–39 in this most recent analysis, yet that age-group showed no increased risk of breast cancer, indicating that the cancers may merely have presented earlier than expected rather than increased in number.

The researchers calculate that the increased risk found for women aged 30–34 would be the equivalent of 14 breast cancer cases annually per 100,000 women, or one case of breast cancer each year for every 7,000 ever-users of the pill.

## Evaluating the Results

One of the problems with evaluating not only these three studies but also those done before is that there is no one protocol followed by all of them, as was pointed out at the FDA committee hearing by James J. Schlesselman, a professor in the Department of Preventive Medicine and Biometrics at the Uniformed Services University of the Health Sciences, Bethesda, Maryland. To give but a few examples, researchers select their control groups differently; the factors they choose to examine are not the same; the age that is considered early for menarche is categorized variously; early pill use is defined sometimes as that occurring before age 20 and sometimes as that occurring before age 25; and some studies look only at nulliparous as opposed to parous women while others have a larger number of categories for parity. Overall, Schlesselman said, he was not reassured by the data presented, but he was not alarmed either.

Clifford Kay, director of the Royal College study, speculated on why his study had pinpointed an increased risk among pill users of parity one. He suggested that the pill was negating the protective effect against breast cancer that first pregnancies normally provide to a woman, but not the protective effect conferred by additional pregnancies. Kay noted that even if his results were to be confirmed, the level of risk "might possibly be an acceptable one if you bear in mind the other benefits of the pill and, of course, the overwhelming benefit of effective contraception."

Samuel S. Shapiro, director of the Slone Epidemiology Unit at Boston University School of Medicine and one of the researchers involved in the hospital-based study, told the committee that "we are all highly confused by the contradictory findings." He acknowledged that the increased risk of breast cancer after short periods of pill use—particularly after less than three months of use—was a finding of his study that was "biologically implausible. I take it as evidence of some bias in our study." He suggested that one area of possible bias is selective diagnosis of breast cancer among oral contraceptive users; women taking the pill may be screened for breast cancer more frequently than women who are not on the pill.

Jeffrey Perlman, chief of the Contraception Evaluation Branch of the National Institute of Child Health and Human Development, testified that there has been an increase in the incidence of breast cancer in the United States since the pill came on the market. However, he said that the breast cancer rates are considerably below what would have been seen if all oral contraceptive users had a risk that was twice that of nonusers, as the hospital-based study indicated. In fact, Perlman added, even without the pill, there would have been an increase in the incidence of breast cancer among young women. He said that delayed childbearing has been the reason for much of the increased risk.

Data from the National Cancer Institute indicate that the incidence of breast cancer has been increasing by more than one percent each year—from about 90 cases per 100,000 white females in 1975 to 104 per 100,000 in 1985.[18] Some of this increase may be due to an increase in screening activities. However, one analysis has shown how later age at first pregnancy, which is known to be associated with a higher risk of breast cancer, may also contribute to changes in the incidence of the disease.[19] The analysis notes that 71 percent of white women born between 1935 and 1939 had had at least one child by age 25, whereas only 49 percent of white women born between 1950 and 1954 had had at least one child by that age. Consequently, in comparison with the women who are 15 years older, the younger cohort is expected to have a risk of breast cancer of 1.1, or about 70,000 more cases of breast cancer than they would have experienced if 71 percent of them had borne a first child by age 25.

Bruce Stadel, acting chief of the Epidemiology Branch of the Food and Drug Administration and lead author of the CASH analysis, said he was not prepared, on the basis of his and other findings, to say that an increase in risk "is what happens. Rather the findings are suggestive of directions for further analysis." All three research projects will be continuing sources of data, and at least one other large-scale study will be launched by the National Cancer Institute. That study is expected to enroll 1,000 cases and an equal number of controls, with collection of data scheduled to be complete in 1992.

Many committee members as well as others who spoke from the fields of gynecology and reproductive health seemed to indicate that if conflicting results forced them to choose between a smaller case-control study that found an overall increase in risk and a larger population-based study such as CASH that did not, they would give more weight to the results of the latter. Consequently, the statement issued by the committee at the end of the hearing said that "in consideration of the total population of breast cancer cases and controls that have been reviewed in various studies, the overall risk of breast cancer in relation to oral contraceptive use is approximately 1.0; that is, there is no apparent association between oral contraceptive use and breast cancer."[20]

The committee added, however, that certain subgroups of women who use oral contraceptives may be at increased risk, including those who begin using the pill early in their childbearing years, those who use it for an extended period of time and those who use oral contraceptives prior to their first pregnancies. The committee emphasized that these findings "only occur in some studies and that other large studies have shown no such possible associations." It concluded, "The existing data do not support a change in prescribing practices by physicians or in the use of oral contraceptives by women."

The statement also recommended more basic research on the biology of the human breast, as well as large clinical studies of pill users. One of the weaknesses of the three recent analyses, as well as prior research, is that most of the women involved have taken older formulations of the pill that contain higher doses of hormones than do the pills currently marketed.

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# DIGEST

## Hospital's Cesarean Rate Reduced by One-Third, Without Adverse Effects for Mothers and Babies

Physicians in a Chicago hospital lowered the hospital's cesarean section rate by one-third over a two-year period—from 17.5 percent of births to 11.5 percent of births. Rates of primary and repeat cesarean delivery were both reduced, but the decrease was substantial only for primary procedures. The change in delivery patterns, encompassing approximately 4,400 births to both private and staff patients, occurred without apparent adverse consequences for maternal or neonatal health.[1]

Individual physicians have reported success in lowering their cesarean section rates, but physicians in the Department of Obstetrics and Gynecology of Mount Sinai Hospital Medical Center in Chicago set out to decrease the rate for the entire department and for all patients of the department. Participation by private physicians, who deliver approximately 55 percent of the hospital's obstetric patients, was voluntary; nevertheless, all joined in the program. Prior to the January 1, 1986, start of the two-year program, the department set a goal, based on the characteristics of the patient population, of a cesarean rate of 11 percent. Procedures for reaching the goal included requiring a second opinion for all cesarean deliveries except emergency operations; establishing that a trial of labor would be the preferred procedure for all women who had previously undergone cesareans; liberally administering oxytocin to stimulate labor among patients undergoing difficult deliveries; corroborating a diagnosis of fetal distress with blood samples from the scalp; recommending vaginal delivery for almost all breech presentations; and instituting comprehensive peer review of obstetric data, with particular scrutiny of cesarean deliveries.

The department's cesarean section rate for 1985 (prior to the beginning of the program) was 17.5 percent, compared with a national rate of 23 percent. The hospital rate declined to 12.5 percent in 1986 and to 11.5 percent in 1987. The rate for private patients, which fell from 20 percent in 1985 to 12.4 percent in 1987, was higher than that for staff patients—15 percent and 11.7 percent, respectively.

Most of the decline in the cesarean section rate came about because of a significant decrease in first-time cesareans, from 12 percent of deliveries in 1985 to seven percent in 1987. Diagnoses of difficult deliveries and of fetal distress, two of the most common reasons given for performing first cesareans, each fell from four percent to two percent of all deliveries. First cesareans due to breech presentations represented about two percent of all deliveries in both years; however, 42 percent of women with breech presentations completed a vaginal delivery in 1987, up from 28 percent in 1985.

Repeat cesareans declined from six percent to five percent of all deliveries over the course of the program. In 1987, 86 percent of women who had had a previous cesarean underwent a trial of labor, and 70 percent of those who did so had a vaginal delivery. In contrast, 45 percent had attempted vaginal delivery in 1985, and 53 percent had completed it successfully. Overall, 40 percent of patients in 1987 with a history of cesarean section underwent the procedure again.

The overall reduction in the cesarean section rate (significant at $p<0.05$) was achieved despite increasing use of the hospital as a perinatal center and a concomitant increase in the proportion of patients with risk factors that might predispose to cesarean section. For example, the proportion of obstetric patients experiencing their first birth increased from 23 percent in 1985 to 30 percent in 1987, the incidence of breech presentations rose from two percent to five percent, and the proportion of patients who had already had at least one cesarean delivery increased from seven percent to 12 percent.

The decline in the proportion of cesarean deliveries was accompanied by a statistically significant reduction in vaginal deliveries that required physician intervention (such as the use of forceps), from 10 percent of all deliveries in 1985 to four percent in 1987. To help achieve lower rates for both cesarean and forceps deliveries, the physicians administered oxytocin to 41 percent of the 4,400 patients who delivered over the two-year period; this proportion is high for the United States.

No significant increases occurred over the two years in fetal and neonatal mortality. Fetal mortality rates were 10.9 per 1,000 births in 1985, 10.3 per 1,000 in 1986 and 11.9 per 1,000 in 1987 neonatal mortality rates were 12.8, 10.7 and 11.2, respectively. Three of the eight neonates who died following vaginal deliveries in 1987 were breech presentations. Asphyxia was determined to have played a role in these deaths; however, excessive weight was not a factor, as the infants weighed 1,100 g, 2,000 g and 2,900 g.

Although there was no significant difference between the two years in the proportion of infants with one-minute Apgar scores of less than seven (11–13 percent), infants with five-minute Apgar scores of less than seven increased from three percent to five percent, a difference that was significant. One maternal death occurred during the study and was attributed to liver failure and sepsis.

The results show "that a voluntary initiative can reduce cesarean section rates," according to the report on the program. The authors estimate that if their results were applied to the national scene, the number of cesarean operations would fall by 450,000 annually; they add that "a reduction of this magnitude could result in major savings in health care costs." The immediate result of the departmental initiative, however, was that the hospital lost revenue: Its reimbursement rate is $3,000 less for a vaginal delivery than for a cesarean section, and physician fees are $250–$500 less per vaginal delivery.

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## U.S. Population Expected To Peak by the Year 2040, Then Begin to Decline

After 1995, the population of the United States is expected to grow at a slower rate than at any other period in the country's history; by the year 2040, this rate may be negative, and after passing the 300 million mark, the overall size of the population should then begin to decline.[1] As the huge baby-boom cohort ages, the median age of the population is projected to rise from 32 to 42 over the next 40 years. In the 1990s, total births and births among whites are likely to decrease sharply, births among blacks should remain at current levels and births among other races are expected to increase dramatically.

A report issued recently by the U.S. Bureau of the Census contains projections of the U.S. population for the years 1988–2080, which are based on 1986 population estimates by age, sex and race. The full report contains sets of projections based on high, middle or low assumptions about the future course of fertility, mortality and net immigration. The middle series of projections reflect the assumption that completed cohort fertility will be 1,800 births per 1,000 women; as mortality levels decrease, life expectancy will increase to 81 years in 2080 (compared with 75 in 1986); and annual net immigration will decline steadily from 600,000 in 1987 to 500,000 after 1998 (because of an anticipated decrease in illegal immigration).

According to the report, the annual rate of population growth is expected to slow considerably in future years, from its current rate of just under one percent to rates of 0.76 percent in 1995, 0.50 percent in 2010 and –0.07 percent in 2050. The size of the population is projected to increase from 244 million in 1987 to 302 million in 2040, after which it is expected to decline by almost 10 million by 2080.*

The reason for the slowing of population growth is the narrowing of the gap between crude birthrates and death rates. Between 1987 and 2000, the crude birthrate is expected to decline from 16 births per 1,000 population to 13 per 1,000. After the turn of the century, increases in the crude death rate related to the aging of the population should account for most of the decline in the growth rate: The crude death rate is expected to rise sharply, from nine deaths per 1,000 population in the year 2000 to 13 in 2040. By the year 2030, the crude death rate is projected to exceed the crude birthrate; consequently, the rate of population growth should be negative thereafter.

The median age of the population is projected to rise from 32 in 1987 to 39 in 2010, 42 in 2030 and 44 in 2080. According to the middle set of projections, the elderly population should increase slowly until 2010, when survivors in the huge baby-boom cohort begin to reach the age of 65. Between 2010 and 2030, however, the proportion of the population 65 and over should increase from 14 percent to 22 percent, and by 2030, 59 million Americans will be elderly—double the present number. Further, because of the projected increase in life expectancy and the size of the baby-boom cohort, people aged 85 and older will account for about 22 percent of all of those over the age of 65 in 2050, up from just 10 percent in 1987. On the other hand, the proportion of the population that is under 35, which now constitutes 55 percent of the total population, will never again account for such a large share; by 2050, only 40 percent of the population will be in this age-group.

Over the next 40 years, the white population is expected to increase by 11 percent, to 235 million in 2027, and then decline steadily. During the same period, the black population is expected to increase by 50 percent, to 44 million, after which its rate of growth should slow. The fastest growing group in the future will consist of "other" races (primarily Asians, Pacific Islanders and American Indians), whose population is projected to triple by 2040. Between 1987 and 2080, the white population should grow by six million; the black population, by 18 million; and the number of people of other races, by 25 million. Whereas 85 percent of the population was white, 12 percent black and three percent other races in 1987, the distribution is projected to be 73 percent white, 16 percent black and 11 percent other races by the year 2080.

The numbers of total births and white births are expected to drop precipitously in the 1990s, even though fertility levels should remain the same in the total population and will probably rise above current levels among whites. Between 1990 and 2000, for example, total births are projected to decrease by nine percent, from 3.7 million to 3.4 million, while white births should decline by 14 percent, from 3.0 million to 2.6 million. Between 2000 and 2020, the numbers of total births and white births should remain stable, after which they will decline slowly. The future annual number of black births is projected to remain close to 600,000 (slightly below the current level) for at least the next 50 years, so the share of all births that are black will rise very little. On the other hand, the number of births among women of other races is expected to increase dramatically: In the 1990s, births among other races are projected to increase 20 percent, and by 2030, there will be two times more births among this group than there are currently.

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## Prenatal Care Reduces, But Does Not Eliminate, Racial Difference in LBW

Infants born to women who receive adequate prenatal care are at decreased risk of low birth weight and preterm delivery; moreover, improvement in the use of prenatal care is associated with a greater reduction in risk among black infants than among white infants. Nevertheless, prenatal care does not appear to eliminate racial differentials in birth outcomes: Even when black women receive adequate care, they are more likely than comparable whites to have low-birth-weight and preterm infants. These are the major findings of a recent study that examined the impact of prenatal care on the birth weights of black and white infants at normal risk for low birth weight.[1]

The data are based on the birth certificates of babies born in 1978 at 17 California hospitals operated by the Kaiser-Permanente health maintenance organization (HMO). Birth certificates that did not list the infant's race, the date the mother initiated prenatal care and the number of prenatal visits were excluded from analysis, as were multiple births, infants with congenital malformations and babies weighing less than 500 g at birth. The final sample consisted of 31,871 infants, 88 percent of whom were white and 12 percent of whom were black.

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*The lowest series (which assumes a lifetime fertility of 1,500 births per 1,000, a life expectancy of 78 and a yearly immigration of 300,000) projects the U.S. population to rise only slightly between 1990 and 2020—from about 250 million to 265 million—and then to decline precipitously (to 185 million by 2080). The highest series (based on an assumed lifetime fertility of 2,200 births per 1,000, a life expectancy of 88 and an annual immigration of 800,000) projects a steadily increasing U.S. population, from 252 million in 1990 to more than 500 million in 2080.

Ninety percent of the black mothers and 83 percent of the white mothers had had at least 12 years of schooling (compared with 69 percent of pregnant women in California as a whole). In addition, the vast majority of mothers in the sample were aged 18–34, with only 11 percent of blacks and eight percent of whites falling into a younger or older age-group. Because most mothers had achieved a relatively high level of educational attainment and were within the normal age-range for childbearing, their infants were at relatively low risk for low birth weight.

In fact, only four percent of the infants were of low birth weight (<2500 g) and one percent were of very low birth weight (<1500 g), compared with seven percent and one percent, respectively, of all newborns in California in 1978. Nevertheless, as in the general population, black infants were two times more likely than whites to be of low birth weight (eight percent vs. four percent) and of very low birth weight (two percent vs. one percent, respectively).

Despite the availability of prenatal services through the HMO, black women were significantly less likely than white women to have received an adequate level* of prenatal care (52 percent vs. 61 percent), and were significantly more likely to have received inadequate care (10 percent vs. six percent) or an intermediate level of care (38 percent vs. 33 percent).

Among women of both races, the incidence of low birth weight and very low birth weight decreased significantly with increasing levels of prenatal care. However, at every level, infants born to black women were more likely than those born to whites to weigh under 2500 g at birth: Among infants whose mothers had received an inadequate level of care, 15 percent of blacks and six percent of whites were of low birth weight; among infants whose mothers had received an intermediate level of care, 11 percent of blacks and five percent of whites were of low birth weight; and among those whose mothers had received adequate care, five percent of blacks and only two percent of whites were of low birth weight.

Nevertheless, as the amount of prenatal care increased from inadequate to adequate, reductions in the incidence of low birth weight were greater among the black infants than among the whites. For example, when birth outcomes among women who had had adequate care are compared with those among women who had had inadequate care, the incidence of very low birth weight was 72 percent lower among the blacks in the former group and 52 percent lower among the whites in that group. Further, the risk of giving birth to a very low birth weight baby among mothers who had received inadequate prenatal care was four times higher among black mothers and only two times higher among whites than the risk among those who had had adequate care.

Among both blacks and whites, as the level of prenatal care improved from inadequate to adequate, the proportions of preterm births (<260 days' gestation) declined by approximately 65 percent. Although the level of care had no impact on the incidence of low birth weight among preterm infants, it did have a significant effect on the incidence of low birth weight among term births. Moreover, adequate prenatal care was associated with a greater reduction in the incidence of low birth weight among black term infants than among white term infants. Furthermore, whereas the incidence of low birth weight among black term infants decreased significantly at every level of care received by black mothers, only adequate care was associated with a reduction in incidence among whites.

According to the researchers, racial differentials in the use of prenatal care accounted for less than 15 percent of the difference between the races in the incidence of low birth weight and very low birth weight. Nevertheless, they point out that because increasing levels of prenatal care are associated with even greater improvements in birth outcomes among black women than among whites, further studies should determine why black women are less likely than whites to use prenatal services. They also maintain that increased participation in prenatal care should result in even more dramatic improvements among infants born to women at high risk for poor birth outcomes.

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## Cohabitation Represents Important Transitional Stage for Young Whites

Cohabitation without marriage has become a major feature of the life course of young Americans. According to a recent study of 23-year-olds, one-half of all the women and two-thirds of all the men who had ever married or cohabited had first exited single life to cohabit without marriage; one-third of the women and two-fifths of the men who had married had previously had a cohabiting relationship.[1]

Data for the analysis come from an ongoing study of white children and their mothers selected from the birth records of the Detroit metropolitan area in 1961. The mothers were interviewed a number of times between 1962 and 1985, and the children were interviewed in 1980 and in 1985. The 1985 survey sample consisted of 932 men and women aged 23, representing 85 percent of the children whose mothers were originally interviewed in 1962. Although complete marital and cohabitation histories were obtained from respondents, the analysis focuses on the transition from single life to first marriage or first cohabitation and on the outcomes of first cohabitation.

By the age of 23.5, 60 percent of the women had exited single life—30 percent had done so directly through marriage and an equal proportion had done so through cohabitation without marriage. In contrast, 45 percent of the men had exited single life, but only 14 percent had done so directly through marriage, while 31 percent had done so via cohabitation. In other words, one-half of the women and two-thirds of the men who had ever lived with a partner of the opposite sex before the age of 24 had done so through cohabitation rather than through marriage.

The data reveal a close correlation between the experience of exiting single life through cohabitation and ever having had a cohabiting relationship: Whereas 31 percent of the men and 30 percent of the women had exited single life through cohabitation by age 23.5, the total proportion who had ever experienced cohabitation by that age (either premaritally or after the break-up of a first marriage) rose to only 32 percent of both sexes. This finding indicates that at least among the people who were surveyed, all of whom were only 23 years of age, cohabiting relationships occurred primarily before marriage.

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*The adequacy of prenatal care obtained by each mother was categorized according to the standards recommended by the American College of Obstetricians and Gynecologists and adopted by the Institute of Medicine. Care was designated as "inadequate," "intermediate" or "adequate" based on the number of prenatal care visits, the length of gestation and the trimester of initiation of care.

Among the women, the rates of transition from the single state to marriage and to cohabitation were similar, although the cohabitation rates were slightly higher than the marriage rates before age 18 and were slightly lower after about age 19. Among the men, the rates of transition from single life to marriage were substantially lower than the rates of transition to cohabitation. Further, the men were substantially and consistently less likely than the women to marry.

Overall, one-third of the women and two-fifths of the men who had married by age 23.5 reported having ever had a cohabiting relationship. For a substantial proportion of respondents, cohabitation was followed by marriage: Ten percent of the male respondents and 15 percent of the female respondents had lived with someone and had later married. Thus, combined with the 14 percent of men and 30 percent of women who had married without first cohabiting, the total proportions of the sample who had married by age 23.5 were 24 percent among the men and 45 percent among the women.

Sixty-three percent of the men's first cohabiting relationships and 60 percent of the women's terminated within two years of initiation. However, the women's first relationships were more likely to have ended in marriage than to have been dissolved (37 percent and 23 percent, respectively), while the men's were more likely to have been dissolved than to have ended in marriage (40 percent and 23 percent, respectively).

At the time of the survey, approximately 40 percent of the women and about 20 percent of the men were currently married; two percent of the women and fewer than one percent of the men reported having been married more than once. Further, more than 10 percent of both the women and the men were currently cohabiting, and six percent of the women and four percent of the men reported having cohabited more than once.

The researcher points out that the proportion of men and women who were cohabiting at the time of the survey was only about one-third as large as the proportion who had ever cohabited, and maintains that this differential is likely to grow as the young people age. He concludes that although cohabitation is an important transitional state for many young people, "marriage represents the bulk of the union experience for the great majority of Americans."

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## France: Pill and IUD Use Increase Substantially, Use of Withdrawal Falls

Of the two-thirds of all French women who use reversible contraceptives, 76 percent use either the pill or the IUD. The pill is the most commonly used method among French women under 35, whereas the IUD is the most widely used method among 35–44-year-olds. Reliance on both methods has risen substantially over the past 10 years. One result is that only two percent of women in stable unions are considered to be at risk of unintended pregnancy. These are the highlights of an analysis of data from a nationally representative survey of 3,000 French women, carried out by demographers from the Institut National d'Etudes Démographiques (INED).[1]

Seventy-two percent of French women 18–49 practice contraception: Seven percent have undergone sterilization, while 64 percent use reversible methods. Twenty-nine percent of all French women use no contraceptive method: Four percent are infertile, five percent are pregnant, five percent want to get pregnant and 13 percent have no regular sexual partner. The remaining two percent of women are considered to be at risk of unintended pregnancy.

Among women using reversible methods, one-half (32 percent of all women) use the pill, almost one-quarter (17 percent) use the IUD and the remaining one-quarter rely on withdrawal (seven percent), the condom (four percent), periodic abstinence (two percent) or other methods (two percent).

The pill is the most popular method among women aged 18–34 who rely on reversible methods, with use peaking at 51 percent among those in the 20–24 age-group. From age 25 onwards, increasing proportions of women use the IUD: By ages 35–39, the IUD surpasses the pill as the method of choice (28 percent vs. 25 percent, respectively). The IUD remains the leading method among women 40–44, after which sterilization is the most commonly used method. As with use of the IUD and sterilization, reliance on withdrawal increases with age: Two percent of women aged 20–24 use this method, compared with 15 percent of those aged 45–49. Only 2–6 percent of women in any age-group report that their partner uses a condom, with those aged 35–39 the most likely to employ this method. Periodic abstinence and "other methods" are practiced by fewer than five percent of women in all age-groups.

Between 1978 and 1988, the proportion of women aged 20–44 using reversible methods remained stable, at around 68 percent. However, whereas reliance on withdrawal and periodic abstinence declined during this period (by 12 and three percentage points, respectively), use of the pill and the IUD rose (by six and 10 percentage points, respectively). By 1988, 53 percent of all women 20–44 were using either the pill or the IUD, up from 36 percent of such women in 1978.

In the past 10 years, pill and IUD use has increased among women aged 20–44 of all marital statuses, educational levels and places of residence, and the difference among subgroups has narrowed. Nevertheless, unmarried women with regular sexual partners are still more likely than married women or those without regular partners to use one of these two methods (65 percent vs. 54 percent and 26 percent, respectively). Further, women who have graduated from high school are more likely than are those with only a primary education to use these methods (55 percent vs. 40 percent). However, rural women are now as likely as urban women to use the pill or the IUD.

The researchers point out that in the 1970s, the pill replaced withdrawal as the method of choice among women who wanted to stop childbearing; however, in the 1980s, the IUD has become the leading method among such women, while the pill is gaining adherents among younger women who want to delay childbearing. The investigators speculate that in the future, the IUD will probably be used by more and more women, unless the low-dose pill becomes a serious competitor.

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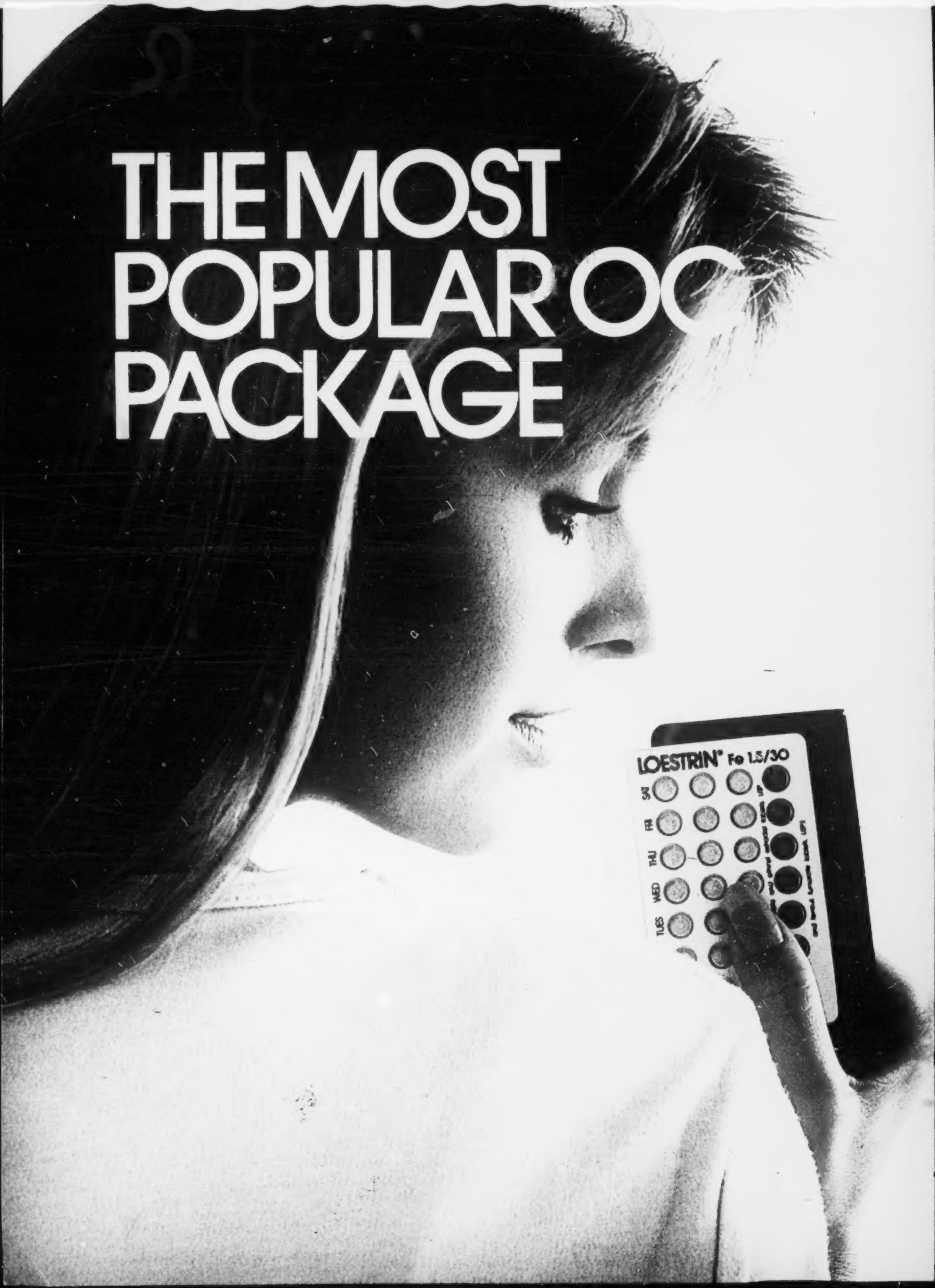
Family Planning

# Perspectives

Volume 21, Number 3, May/June 1989

Nonvoluntary Teenage Intercourse
Prenatal Care in FP Clinics

New Estimates of Contraceptive Failure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THE SMALLEST, SLEEKEST, MOST DISCREET OC PACKAGE EVER

*National random sample of more than 500 OC users.

Reference 1. Data on file, Medical Affairs Dept, Parke-Davis.

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**PARKE-DAVIS**

Please see next page for brief summary of prescribing information.

## LOESTRIN® 21
(Norethindrone Acetate and Ethinyl Estradiol Tablets, USP)

## LOESTRIN® Fe
(Norethindrone Acetate and Ethinyl Estradiol Tablets, USP and Ferrous Fumarate Tablets, USP)

**Before prescribing, please see full prescribing information. A Brief Summary follows:**
**INDICATIONS AND USAGE:** Loestrin **21** and Loestrin **Fe** are indicated for the prevention of pregnancy in women who elect to use oral contraceptives (OCs) as a method of contraception. **CONTRAINDICATIONS:** OCs should not be used in women who currently have the following conditions: **1.** Thrombophlebitis or thromboembolic disorders. **2.** A past history of deep vein thrombophlebitis or thromboembolic disorders. **3.** Cerebral vascular or coronary artery disease. **4.** Known or suspected carcinoma of the breast. **5.** Carcinoma of the endometrium or other known or suspected estrogen dependent neoplasia. **6.** Undiagnosed abnormal genital bleeding. **7.** Cholestatic jaundice of pregnancy or jaundice with prior pill use. **8.** Hepatic adenomas or carcinomas. **9.** Known or suspected pregnancy.

**WARNINGS**

> **Cigarette smoking increases the risk of serious cardiovascular side effects from oral contraceptive use. This risk increases with age and with heavy smoking (15 or more cigarettes per day) and is quite marked in women over 35 years of age. Women who use oral contraceptives should be strongly advised not to smoke.**

The use of OCs is associated with increased risks of several serious conditions including myocardial infarction, thromboembolism, stroke, hepatic neoplasia, and gallbladder disease, although the risk of serious morbidity or mortality is very small in healthy women without underlying risk factors. The risk of morbidity and mortality increases significantly in the presence of other underlying risk factors such as hypertension, hyperlipidemias, obesity and diabetes. Practitioners prescribing OCs should be familiar with the following information relating to these risks. The information contained in the package insert is principally based on studies carried out in patients who used OCs with higher formulations of estrogens and progestogens than those in common use today. The effect of long-term use of the OCs with lower formulations of both estrogens and progestogens remains to be determined. Throughout this labeling, epidemiological studies reported are of two types: retrospective, or case control, studies and prospective, or cohort, studies. Case control studies provide a measure of the relative risk of a disease, namely, a *ratio* of the incidence of a disease among OC users to that among nonusers. The relative risk does not provide information on the actual clinical occurrence of a disease. Cohort studies provide a measure of attributable risk, which is the *difference* in the incidence of disease between OC users and nonusers. The attributable risk does provide information about the actual occurrence of a disease in the population. For further information, the reader is referred to a text on epidemiological methods. **1. Thromboembolic Disorders and Other Vascular Problems: a. Myocardial infarction:** An increased risk of myocardial infarction has been attributed to OC use. This risk is primarily in smokers or women with other underlying risk factors for coronary artery disease such as hypertension, hypercholesterolemia, morbid obesity, and diabetes. The relative risk of heart attack for current OC users has been estimated to be two to six. The risk is very low under the age of 30. Smoking in combination with OC use has been shown to contribute substantially to the incidence of myocardial infarctions in women in their mid-thirties or older with smoking accounting for the majority of excess cases. Mortality rates associated with circulatory disease have been shown to increase substantially in smokers over the age of 35 and nonsmokers over the age of 40 among women who use OCs. OCs may compound the effects of well-known risk factors, such as hypertension, diabetes, hyperlipidemias, age and obesity. In particular, some progestogens are known to decrease HDL cholesterol and cause glucose intolerance, while estrogens may create a state of hyperinsulinism. OCs have been shown to increase blood pressure among users (see section 9 in WARNINGS). Similar effects on risk factors have been associated with an increased risk of heart disease. OCs must be used with caution in women with cardiovascular disease risk factors. **b. Thromboembolism:** An increased risk of thromboembolic and thrombotic disease associated with the use of OCs is well established. Case control studies have found the relative risk of users compared to nonusers to be 3 for the first episode of superficial venous thrombosis, 4 to 11 for deep vein thrombosis or pulmonary embolism, and 1.5 to 6 for women with predisposing conditions for venous thromboembolic disease. Cohort studies have shown the relative risk to be somewhat lower, about 3 for new cases and about 4.5 for new cases requiring hospitalization. The risk of thromboembolic disease due to OCs is not related to length of use and disappears after pill use is stopped. A two- to four-fold increase in relative risk of postoperative thromboembolic complications has been reported with the use of OCs. The relative risk of venous thrombosis in women who have predisposing conditions is twice that of women without such medical conditions. If feasible, OCs should be discontinued at least four weeks prior to and for two weeks after elective surgery of a type associated with an increase in risk of thromboembolism and during and following prolonged immobilization. Since the immediate postpartum period is also associated with an increased risk of thromboembolism, OCs should be started no earlier than four to six weeks after delivery in women who elect not to breast feed. **c. Cerebrovascular diseases:** OCs have been shown to increase both the relative and attributable risks of cerebrovascular events (thrombotic and hemorrhagic strokes), although, in general, the risk is greatest among older (> 35 years), hypertensive women who also smoke. Hypertension was found to be a risk factor for both users and nonusers, for both types of strokes, while smoking interacted to increase the risk for hemorrhagic strokes. In a large study, the relative risk of thrombotic strokes has been shown to range from 3 for normotensive users to 14 for users with severe hypertension. The relative risk of hemorrhagic stroke is reported to be 1.2 for nonsmokers who used OCs, 2.6 for smokers who did not use OCs, 7.6 for smokers who used OCs, 1.8 for normotensive users and 25.7 for users with severe hypertension. The attributable risk is also greater in older women. **d. Dose-related risk of vascular disease from OCs:** A positive association has been observed between the amount of estrogen and progestogen in OCs and the risk of vascular disease. A decline in serum high-density lipoproteins (HDL) has been reported with many progestational agents. A decline in serum high-density lipoproteins has been associated with an increased incidence of ischemic heart disease. Because estrogens increase HDL cholesterol, the net effect of an OC depends on a balance achieved between doses of estrogen and progestogen and the nature and absolute amount of progestogens used in the contraceptives. The amount of both hormones should be considered in the choice of an OC. Minimizing exposure to estrogen and progestogen is in keeping with good principles of therapeutics. For any particular estrogen/progestogen combination, the dosage regimen prescribed should be one which contains the least amount of estrogen and progestogen that is compatible with a low failure rate and the needs of the individual patient. New acceptors of OC agents should be started on preparations containing the lowest dose of estrogen which produces satisfactory results for the patient. **e. Persistence of risk of vascular disease:** There are two studies which have shown persistence of risk of vascular disease for ever-users of OCs. In a study in the United States, the risk of developing myocardial infarction after discontinuing OCs persists for at least 9 years for women 40-49 years who had used OCs for 5 or more years, but this increased risk was not demonstrated in other age groups. In another study in Great Britain, the risk of developing cerebrovascular disease persisted for at least 6 years after discontinuation of OCs, although excess risk was very small. However, both studies were performed with OC formulations containing 50 micrograms or higher of estrogen. **2. Estimates of Mortality from Contraceptive Use:** One study gathered data from a variety of sources which have estimated the mortality rate associated with different methods of contraception at different ages. These estimates include the combined risk of death associated with contraceptive methods plus the risk attributable to pregnancy in the event of method failure. Each method of contraception has its specific benefits and risks. The study concluded that with the exception of OC users 35 and older who smoke and 40 and older who do not smoke, mortality associated with all methods of birth control is low and below that associated with childbirth. However, smokers 35 and older and nonsmokers 40 and older who use OCs have an increase in mortality higher than those using other methods of birth control. These facts must be weighed in conjunction with failure rates for other methods and the risk associated with subsequent pregnancy. **3. Carcinoma of the Reproductive Organs:** Numerous epidemiological studies have been performed on the incidence of breast, endometrial, ovarian and cervical cancer in women using OCs. The overwhelming evidence in the literature suggests that use of OCs is not associated with an increase in the risk of developing breast cancer, regardless of the age and parity of first use or with most of the marketed brands and doses. The Cancer and Steroid Hormone (CASH) study also showed no latent effect on the risk of breast cancer for at least a decade following long-term use. A few studies have shown a slightly increased relative risk of developing breast cancer, although the methodology of these studies, which included differences in examination of users and nonusers and differences in age at start of use, has been questioned. Some studies suggest that OC use has been associated with an increase in the risk of cervical intraepithelial neoplasia in some populations of women. However, there continues to be controversy about the extent to which such findings may be due to differences in sexual behavior and other factors. In spite of many studies of the relationship between OC use and breast and cervical cancers, a cause and effect relationship has not been established. **4. Hepatic Neoplasia:** Benign hepatic adenomas are associated with OC use, although the incidence of benign tumors is rare in the United States. Indirect calculations have estimated the attributable risk to be in the range of 3.3 cases/100,000 for users, a risk that increases after four or more years of use. Rupture of rare, benign, hepatic adenomas may cause death through intraabdominal hemorrhage. Studies from Britain have shown an increased risk of developing hepatocellular carcinoma in long-term (> 8 years) OC users. However, these cancers are extremely rare in the US, and the attributable risk (the excess incidence) of liver cancers in OC users approaches less than one per million users. **5. Ocular Lesions:** There have been clinical case reports of retinal thrombosis associated with the use of OCs. OCs should be discontinued if there is unexplained partial or complete loss of vision; onset of proptosis or diplopia; papilledema; or retinal vascular lesions. Appropriate diagnostic and therapeutic measures should be undertaken immediately. **6. OC Use Before or During Early Pregnancy: Risk of Birth Defects:** Extensive epidemiological studies have revealed no increased risk of birth defects in women who have used OCs prior to pregnancy. Studies also do not suggest a teratogenic effect, particularly insofar as cardiac anomalies and limb reduction defects are concerned, when taken inadvertently during early pregnancy. The administration of OCs to induce withdrawal bleeding should not be used as a test for pregnancy. OCs should not be used during pregnancy to treat threatened or habitual abortion. It is recommended that for any patient who has missed two consecutive periods, pregnancy should be ruled out before continuing OC use. If the patient has not adhered to the prescribed schedule, the possibility of pregnancy should be considered at the time of the first missed period. OC use should be discontinued if pregnancy is confirmed. **7. Gallbladder Disease:** Earlier studies have reported an increased lifetime relative risk of gallbladder surgery in users of OCs and estrogens. More recent studies, however, have shown that the relative risk of developing gallbladder disease among OC users may be minimal. The recent findings of minimal risk may be related to the use of OC formulations containing lower hormonal doses of estrogens and progestogens. **8. Carbohydrate and Lipid Metabolic Effects:** OCs have been shown to cause glucose intolerance in a significant percentage of users. OCs containing greater than 75 micrograms of estrogen cause hyperinsulinism, while lower doses of estrogen cause less glucose intolerance. Progestogens increase insulin secretion and create insulin resistance, this effect varying with different progestational agents. However, in the nondiabetic woman, OCs appear to have no effect on fasting blood glucose. Because of these demonstrated effects, prediabetic and diabetic women should be carefully observed while taking OCs. A small proportion of women will have persistent hypertriglyceridemia while on the pill. As discussed earlier (see WARNINGS 1a. and 1d.), changes in serum triglycerides and lipoprotein levels have been reported in OC users. **9. Elevated Blood Pressure:** An increase in blood pressure has been reported in women taking OCs, and this increase is more likely in older OC users and with continued use. Data from the Royal College of General Practitioners and subsequent randomized trials have shown that the incidence of hypertension increases with increasing concentrations of progestogens. Women with a history of hypertension or hypertension-related diseases or renal disease should be encouraged to use another method of contraception. If women elect to use OCs, they should be monitored closely, and if significant elevation of blood pressure occurs, OCs should be discontinued. For most women, elevated blood pressure will return to normal after stopping OCs, and there is no difference in the occurrence of hypertension among ever- and never-users. **10. Headache:** The onset or exacerbation of migraine or development of headache with a new pattern which is recurrent, persistent or severe requires discontinuation of OCs and evaluation of the cause. **11. Bleeding Irregularities:** Breakthrough bleeding and spotting are sometimes encountered in patients on OCs, especially during the first three months of use. Nonhormonal causes should be considered and adequate diagnostic measures taken to rule out malignancy or pregnancy in the event of breakthrough bleeding, as in the case of any abnormal vaginal bleeding. If pathology has been excluded, time or a change to another formulation may solve the problem. In the event of amenorrhea, pregnancy should be ruled out. Some women may encounter postpill amenorrhea or oligomenorrhea, especially when such a condition was preexistent. **PRECAUTIONS: 1. Physical Examination and Follow-Up:** A complete medical history and physical examination should be taken prior to the initiation or reinstitution of OCs and at least annually during use of OCs. These physical examinations should include special reference to blood pressure, breasts, abdomen and pelvic organs, including cervical cytology, and relevant laboratory tests. In case of undiagnosed, persistent or recurrent abnormal vaginal bleeding, appropriate diagnostic measures should be conducted to rule out malignancy. Women with a strong family history of breast cancer or who have breast nodules should be monitored with particular care. **2. Lipid Disorders:** Women who are being treated for hyperlipidemias should be followed closely if they elect to use OCs. Some progestogens may elevate LDL levels and may render the control of hyperlipidemias more difficult. **3. Liver Function:** If jaundice develops in any woman receiving such drugs, the medication should be discontinued. Steroid hormones may be poorly metabolized in patients with impaired liver function. **4. Fluid Retention:** OCs may cause some degree of fluid retention. They should be prescribed with caution, and only with careful monitoring, in patients with conditions which might be aggravated by fluid retention. **5. Emotional Disorders:** Women with a history of depression should be carefully observed and the drug discontinued if depression recurs to a serious degree. **6. Contact Lenses:** Contact lens wearers who develop visual changes or changes in lens tolerance should be assessed by an ophthalmologist. **7. Drug Interactions:** Reduced efficacy and increased incidence of breakthrough bleeding and menstrual irregularities have been associated with concomitant use of rifampin. A similar association, though less marked, has been suggested with barbiturates, phenylbutazone, phenytoin sodium, and possibly with griseofulvin, ampicillin and tetracyclines. **8. Interactions with Laboratory Tests:** Certain endocrine and liver function tests and blood components may be affected by OCs: **a.** Increased prothrombin and factors VII, VIII, IX, and X; decreased antithrombin 3; increased norepinephrine-induced platelet aggregability. **b.** Increased thyroid-binding globulin (TBG) leading to increased circulating total thyroid hormone, as measured by protein-bound iodine (PBI), T4 by column or by radioimmunoassay. Free T3 resin uptake is decreased, reflecting the elevated TBG; free T4 concentration is unaltered. **c.** Other binding proteins may be elevated in serum. **d.** Sex-binding globulins are increased and result in elevated levels of total circulating sex steroids and corticoids; however, free or biologically active levels remain unchanged. **e.** Triglycerides may be increased. **f.** Glucose tolerance may be decreased. **g.** Serum folate levels may be depressed by OC therapy. This may be of clinical significance if a woman becomes pregnant shortly after discontinuing OCs. **9. Carcinogenesis:** See WARNINGS section. **10. Pregnancy:** Pregnancy Category X. See CONTRAINDICATIONS and WARNINGS sections. **11. Nursing Mothers:** Small amounts of OC steroids have been identified in the milk of nursing mothers and a few adverse effects on the child have been reported, including jaundice and breast enlargement. In addition, OCs given in the postpartum period may interfere with lactation by decreasing the quantity and quality of breast milk. If possible, the nursing mother should be advised not to use OCs but to use other forms of contraception until she has completely weaned her child. **INFORMATION FOR THE PATIENT:** See patient labeling. **ADVERSE REACTIONS:** An increased risk of the following serious adverse reactions has been associated with the use of OCs (see WARNINGS section): Thrombophlebitis; arterial thromboembolism; pulmonary embolism; myocardial infarction; cerebral hemorrhage; cerebral thrombosis; hypertension; gallbladder disease; hepatic adenomas or benign liver tumors. There is evidence of an association between the following conditions and the use of OCs, although additional confirmatory studies are needed: Mesenteric thrombosis; retinal thrombosis. The following adverse reactions have been reported in patients receiving OCs and are believed to be drug related: Nausea; vomiting; gastrointestinal symptoms (such as abdominal cramps and bloating); breakthrough bleeding; spotting; change in menstrual flow; amenorrhea; temporary infertility after discontinuance of treatment; edema; melasma which may persist; breast changes: tenderness, enlargement, secretion; change in weight (increase or decrease); change in cervical erosion and secretion; diminution in lactation when given immediately postpartum; cholestatic jaundice; migraine; rash (allergic); mental depression; reduced tolerance to carbohydrates; vaginal candidiasis; change in corneal curvature (steepening); intolerance to contact lenses. The following adverse reactions have been reported in users of OCs and the association has been neither confirmed nor refuted: Premenstrual syndrome; cataracts; changes in appetite; cystitis-like syndrome; headache; nervousness; dizziness; hirsutism; loss of scalp hair; erythema multiforme; erythema nodosum; hemorrhagic eruption; vaginitis; porphyria; impaired renal function; hemolytic uremic syndrome; Budd-Chiari syndrome; acne; changes in libido; colitis. While the following adverse reactions or conditions have been reported to be associated with the use of OCs, no causal relationship has been established: Congenital anomalies; Raynaud's disease; sickle cell disease; mitral valve prolapse; increased risk of developing venous thromboembolic disease among women with blood types A, B or AB, as opposed to women with blood type O. **OVERDOSAGE:** Serious ill effects have not been reported following acute ingestion of large doses of OCs by young children. Overdosage may cause nausea, and withdrawal bleeding may occur in females. **HOW SUPPLIED:** Loestrin **21** 1/20 is available in dispensers each containing 21 tablets. Each tablet contains 1 mg of norethindrone acetate and 20 mcg of ethinyl estradiol. Available in packages of five dispensers. Loestrin **Fe** 1/20 is available in dispensers each containing 21 white tablets and 7 brown tablets. Each white tablet contains 1 mg of norethindrone acetate and 20 mcg of ethinyl estradiol. Each brown tablet contains 75 mg ferrous fumarate. Available in packages of five dispensers. Loestrin **21** 1.5/30 is available in dispensers each containing 21 tablets. Each tablet contains 1.5 mg of norethindrone acetate and 30 mcg of ethinyl estradiol. Available in packages of five dispensers. Loestrin **Fe** 1.5/30 is available in dispensers each containing 21 green tablets and 7 brown tablets. Each green tablet contains 1.5 mg of norethindrone acetate and 30 mcg of ethinyl estradiol. Each brown tablet contains 75 mg ferrous fumarate. Available in packages of five dispensers.

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Family Planning
# Perspectives

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# UPDATE

## More Are Better Informed on AIDS

A recent Gallup Poll indicates that most Americans are very well-informed about AIDS, with more than 90 percent knowing that AIDS can be transmitted via shared hypodermic needles, homosexual or heterosexual relations and tainted transfusions.[1] In addition, misconceptions about AIDS risks have declined: The proportion believing that they could be infected with HIV by being coughed upon or breathed upon fell from 25 percent to 14 percent between 1987 and 1988, and the proportion believing that AIDS can be caught by sharing a drinking glass with an infected person dropped from 26 percent to 18 percent. Half of those surveyed said they had taken at least one precaution against catching AIDS, with 26 percent saying that they are more careful in choosing sexual partners and 12 percent reporting that they have recently begun using condoms or are using them more regularly. Unfortunately, some still report "risk-reduction" measures indicative of misinformation about AIDS: Thirteen percent say they try to avoid using public restrooms, 11 percent shun homosexuals or places where they go and six percent refrain from giving blood.

[1] "Knowledge of AIDS Is Widespread; Many Taking Preventive Measures," *Gallup Report*, No. 261, Feb. 1989, p. 24.

## Sex Education by Phone

In France, anyone who wants information about sexuality need only pick up a telephone.[1] The Minitel system, which consists of tiny computer terminals provided to French citizens and businesses free by the postal service, allows millions of people to make use of thousands of computerized information services (for the price of the telephone call). One such service, set up by the Institute of Sexology and called "Sexolog," provides a wide variety of information—definitions of 83 sexuality-related terms, lively "self-assessment" games consisting of multiple-choice questions about sexual life, detailed information about clinical aspects of sexuality, a confidential 24-hour consultation service and news about books, films, exhibitions and lectures involving sexology. It appears that many of the people who are using the service (well over 1,000 calls a month) are hesitant or embarrassed about consulting a doctor with their questions.

[1] J. Waynberg, " 'Sexolog'—A Computerized Information Service on Sexuality," *EntreNous*, No. 13, Mar. 1989, p. 12

## Remember That Brochure . . . ?

According to a telephone survey of 2,000 adult Americans conducted late last summer, 59 percent remembered having received the Surgeon General's brochure "Understanding AIDS," which the Public Health Service mailed to every U.S. household in the summer of 1988.[1] Of those who recalled having seen it, 67 percent read all or almost all of it, and 43 percent discussed it with someone else. Eighty-four percent were glad to have received it, 89 percent were not offended by it and 85 percent believed that it was a good use of government money. Although blacks were less likely than whites to recall having received the brochure (49 percent vs. 60 percent), black recipients were more likely than comparable whites to have read the brochure thoroughly (79 percent vs. 65 percent). The authors of the study conclude that "the reluctance of some government officials to send educational material on AIDS to the American people on the grounds that it might be offensive now appears unfounded."

[1] B. Gerbert and B. Maguire, "Public Acceptance of the Surgeon General's Brochure on AIDS," *Public Health Reports*, **104**:130, 1989.

## Weighing Contraceptive Efficacy

In a provocative article, James Trussell, a professor of economics and public affairs at Princeton University, argues that the method-effectiveness rates of most contraceptives are incorrectly calculated.[1] Trussell describes the methodology often used in such studies as "unambiguously incorrect": Researchers usually calculate method-failure rates (which purport to represent a method's effectiveness if it is used flawlessly) by simply removing accidental pregnancies resulting from user error, without excluding the associated intervals of incorrect use that did not result in a pregnancy; as a result, the denominator of the failure rate is too large, and the method-failure rate is thus understated. Trussell focuses his commentary on the first-year method-failure rate of the contraceptive sponge. The generally cited rate of 10 pregnancies per 100 users per year is based on data from one study only and, according to Trussell, the true rate may be substantially higher. In a response to the charges, David Edelman, one of the authors of the sponge study, defends the manner in which the effectiveness rates were computed,[2] and the sponge's manufacturer, Whitehall Laboratories, is reported in the article to stand by the accuracy of the sponge's method-failure rates.

[1] J. Trussell, "Today Sponge Effectiveness Data May Be Flawed," *Contraceptive Technology Update*, **10**:61, 1989.

[2] D. Edelman, "Edelman Responds," *Contraceptive Technology Update*, **10**:63, 1989.

## U.S. AIDS Toll Mounts

More than 32,000 men, women and children in the United States were diagnosed as having AIDS in 1988, representing an annual incidence rate of 13.7 cases per 100,000 population.[1] AIDS incidence in

*(Continued on page 102)*

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# UPDATE

*(Continued from page 100)*

1988 was highest among blacks (34.9 cases per 100,000), men (31.2 per 100,000) and Hispanics (28.9 per 100,000). Although the number of cases reported each year has risen steadily, the rate of increase has declined. Ninety percent of the almost 83,000 AIDS cases reported so far have been among adult men. However, from 1987 to 1988, the proportion of AIDS cases among adult women rose from eight percent to 10 percent. Cumulatively, since 1981, black women and Hispanic women have been 13.6 and 10.2 times more likely than white women to develop AIDS. In 1988, 26 percent of AIDS cases among women were attributable to their having a sexual partner with risk factors for AIDS. Finally, more than 1,300 cases of AIDS in 1988 were among children; 78 percent of these children are believed to have acquired HIV infection from their mothers perinatally, and 54 percent of those cases were attributable to maternal intravenous drug use.

1. "Update: Acquired Immunodeficiency Syndrome—United States, 1981–1988," *Morbidity and Mortality Weekly Report*, **38**:229, 1989.

### Smoking's Truly Long-Term Effect

A woman whose mother smoked while pregnant with her is about half as fecund as a woman not exposed to cigarette smoke in utero, according to a prospective study of more than 200 U.S. couples.[1] The association between prenatal exposure and subsequent reduced fecundity remains after the data are adjusted for the effects of the woman's age, frequency of intercourse, age at menarche, childhood exposure to cigarette smoke and her own smoking status. The investigators observe that if it is true that exposure to the by-products of smoking during gestation does reduce fecundity many years later, the mechanism responsible for such an effect is uncertain, and further research must be conducted.

1. C. R. Weinberg, A. J. Wilcox and D. D. Baird, "Reduced Fecundability in Women with Prenatal Exposure to Cigarette Smoking," *American Journal of Epidemiology*, **129**:1072, 1989.

### NORPLANT Gets Preliminary OK

The NORPLANT system of hormonal contraceptive implants took an important step toward wider use in the United States when the Maternal Health Committee of the U.S. Food and Drug Administration (FDA) recommended unanimously on April 27 that the FDA approve the device.[1] The NORPLANT system, which consists of six tiny silicone rubber capsules that are inserted beneath the skin and slowly release small amounts of the hormone levonorgestrel, can provide up to five years of contraceptive protection. The device's most bothersome side effect is its tendency to cause irregular menstrual bleeding. The FDA is expected to announce its final decision within the next few months. NORPLANT is now approved for general use in Finland and Sweden, as well as in 10 developing countries.[2]

1. "U.S. Panel Endorses Birth Control Implant," *New York Times*, Apr. 28, 1989, p. 14; and S. Okie, "FDA Urged to Approve Birth Control Implant: Capsules Inserted Under Woman's Skin Prevent Pregnancy for 5 Years," *Washington Post*, Apr. 28, 1989, p. A1.
2. "41 Countries Have Implant Experience," *NORPLANT Worldwide*, No. 12, Dec. 1988, p. 1.

### Impact of Census Adjustment

With the 1990 census due to begin in less than one year, the political ramifications of the results remain unclear. The extent of any undercount of citizens or accidental inclusion of illegal aliens will never be known exactly, and pressure has been placed on the U.S. Bureau of the Census to try to adjust the census totals to take into account the undercounting or overcounting of individuals. However, although any approach to adjustment would certainly have important implications for localities dependent on federal funds allocated on a per capita basis, it would have virtually no impact on the apportionment of seats in the U.S. House of Representatives.[1] A recent analysis of the impact of eight adjustment scenarios—ranging from making no adjustment at all to correcting for the underreporting of minorities, the overreporting of undocumented aliens and the imputation of characteristics to individuals who could not be reached for survey—found that for 46 of the 50 states, no single adjustment or set of adjustments would affect the total number of House seats for that state. Pennsylvania appeared to have the most to gain: The commonwealth would gain one seat in the House under almost every adjustment scenario examined. California might gain one under some or lose one under others, while Kentucky or Minnesota would lose a seat under several of the scenarios.

1. W. P. O'Hare, "Effects of Census Adjustment," *Population Today*, Mar. 1989, p. 6.

### DES Liability Widened in New York

The New York State Supreme Court recently broadened state guidelines regarding which companies can be held liable for injuries suffered as a result of maternal use of diethylstilbestrol (DES), and the decision may have important implications for pharmaceutical companies around the country.[1] Under the ruling, a company's liability will be determined not by whether its particular brand of DES caused the injury, but by what that company's national market share was at the time the woman took the drug. Although California, Washington and Wisconsin had previously adopted a similar approach, they had permitted companies that could prove they did not sell the particular drug to escape liability, an option the New York decision does not allow. The court took this unusual step because of the "unprecedented identification problem" presented by trying to determine what brand of drug the plaintiff's mother had used 20–30 years before. Several million women took DES in the 1940s, 1950s and 1960s to prevent miscarriage and treat morning sickness; it was discovered years later that women exposed to the drug in utero were at elevated risk of developing vaginal cancer and other serious health problems.

1. S. H. Verhovek, "New York Court Backs Wide Claims on the Drug DES," *New York Times*, Apr. 5, 1989, p. A1.

### Ready for the Female Condom?

Two variations on the female condom appear ready to enter the U.S. market by the end of 1989 or early 1990, according to a recent report.[1] One, dubbed "Barrier" by its developers, is made of latex, is about 50 percent larger than a male condom and is held in place by straps that loop around the woman's thighs; the tube-like pouch contains a silicone lubricant. The device has been given a provisional okay by the Food and Drug Administration (FDA) based on limited tests of a prototype, but a production model of the device must still be submitted for study. The second female condom, now known only as WPC 333, purportedly resembles a child's sock in size and shape; it consists of polyurethane and is lubricated with nonoxynol-9. The developers of WPC 333 have submitted to the FDA their data on the experience of 450 couples in the United States who have used the device, but it remains unclear how long the FDA's approval process will take.

1. "Two Female Condoms Close to Entering U.S. Market," *Contraceptive Technology Update*, **10**:49, 1989.

# Contraceptive Failure in the United States: Revised Estimates from the 1982 National Survey of Family Growth

*Elise F. Jones and Jacqueline Darroch Forrest*

## Summary

It is estimated that only about half of all abortions occurring during the period covered by the 1982 National Survey of Family Growth were actually reported in the survey; thus, contraceptive failure rates calculated from these data are almost certainly inaccurate. An attempt to correct for the underreporting of abortion indicates that actual 12-month use-failure rates are more than one-third higher than those calculated without taking abortion underreporting into account, with rates ranging from six percent for the pill to 14–16 percent for the condom, diaphragm and rhythm and to 26 percent for spermicides. Patterns of contraceptive failure are similar to those found in earlier studies.

**Estimates of use-failure rates for the first year of contraceptive use, corrected for the underreporting of abortion that is common in national surveys, are over 30 percent higher than rates calculated without allowing for abortion underreporting.**

## Introduction

In a major review of research on contraceptive failure in the United States,[1] it was estimated that depending on the method used, between 0.1 percent and 10 percent of couples who use a contraceptive method perfectly (both consistently and correctly) experience an accidental pregnancy in the first year of use.* The lowest failure rates under such conditions were estimated to be 0.1 percent for those using combined oral contraceptives or vasectomy, 0.2 percent for women who were sterilized and 0.5 percent for users of progestin-only oral contraceptives. Rates for users of all other methods were estimated to be a good deal higher: 1–2 percent for the IUD, two and three percent for the condom and diaphragm, respectively, 2–10 percent for rhythm and 3–8 percent for spermicides (depending on the specific method being used).

Yet, numerous studies have shown the probability of unintended pregnancy during contraceptive use to be considerably higher than the rates expected under conditions of perfect use because, in addition to the theoretical or inherent limitations of contraceptive methods, deficiencies in the way they are used contribute to observed failure rates. For example, while in theory oral contraceptives offer almost complete protection against pregnancy, failures occur fairly often in practice because women do not always exactly follow the regimen for taking the pill.

Whereas the inherent limitations of a method are primarily physiological in origin, the factors responsible for further failures are mainly social or psychological in origin. Systematic group differences in use-failure rates for particular methods can be attributed to differences in user error. For example, young women are far more likely than older women to experience an accidental pregnancy while using any given method, presumably because of their inexperience with contraceptive practice.

The risk of unintended pregnancy is one of the basic concerns underlying the choice of a contraceptive method.[2] It is important, therefore, that couples facing this choice have accurate information on contraceptive failure. They need to know how the likelihood of failure during use of each method compares to that of other methods, as well as how such probabilities are likely to vary for persons with their particular characteristics.

Rates of contraceptive failure that reflect experience in actual practice—use-failure rates†—have traditionally been measured on the basis of information provided by individual women of reproductive age interviewed in large-scale surveys, from whom detailed pregnancy and contraceptive use histories are collected. Counts of unintended pregnancies occurring during the practice of contraception (i.e., contraceptive failures) and the numbers of months spent at risk of failure—the two main pieces of information required for the calculation of use-failure rates—can be derived from such data.

Over the last 20 years, such data have been provided by a number of surveys conducted among reproductive-age women in the United States. As the measurement of use-failure has improved over this period, an important problem has received increasing attention: Far fewer abortions have been reported in such surveys than have actually taken place. Because almost half of all unintended pregnancies lead to abortion,[3] woman's failure to report abortions is likely to result in a serious underestimation of failure rates. The tendency to not report abortions may also vary according to contraceptive use at the time of conception and a woman's demographic and socioeconomic characteristics, thereby resulting in a misrepresentation of

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*In this review and in the analysis presented here, "first year" means the first 12 months after the beginning of an interval of method use, whether or not the method had been used previously. Thus, first-year users include both those who are using a method for the very first time and those who are resuming use after some time during which they used another method or no method.

†The theoretical efficacy of a method is virtually impossible to measure.

differences in failure rates by method and subgroup.

The most recent U.S. survey to have provided the data required for the calculation of use-failure rates was the third round of the National Survey of Family Growth (NSFG), conducted by the National Center for Health Statistics (NCHS) in 1982. The detailed pregnancy and contraceptive use histories from the 1982 NSFG cover a period of three and one-half years, from January 1979 through June 1982.*

The Alan Guttmacher Institute (AGI) has developed estimates of the annual numbers of abortions occurring nationally and of the characteristics of abortion patients that are based on individual states' reporting of registered abortions to the Centers for Disease Control and on the AGI's own surveys of abortion providers. The AGI estimates are believed to be the most accurate estimates currently available. Table 1 shows the percentage of the abortions estimated to have actually occurred during the NSFG observation period that were reported in the 1982 NSFG, by age and race. The total number reported represents just under half of the expected total based on the AGI data. This proportion was 55 percent among whites, but only 27 percent among nonwhites. Among whites, the accuracy of abortion reporting improved with age up to age 35 and then dropped off; among nonwhites, there was little relationship with age, although only a very small fraction of all abortions occurring to nonwhite women 35 and older were reported to the NSFG. In addition, other tabulations suggest that women who are not married are less likely to report their abortions than married women.[4] Even though the extent of underreporting can be documented for all women and for major subgroups, it has been impossible up until now to correct contraceptive failure rates with any precision for the underreporting of abortion, because available national-level abortion statistics do not include information on whether a method of contraception was being used at the time of conception and, if so, the method used.

Because of concern that uncorrected contraceptive failure rates could be deceptively low, especially for certain methods and population subgroups, there have been two previous attempts to make corrections to the use-failure rates derived from the 1982 NSFG. One study used the available data on the underreporting of abortion by subgroup, but was not able to allow for method differences in underreporting.[5] In the second, method-specific correction factors were developed using the best data then available on contraceptive practice at the time of conception (for a handful of states),[6] but these data were neither of high enough quality nor were sufficiently representative of the country as a whole to produce satisfactory results.

## A New Approach

The AGI is now engaged in a major project aimed at producing reliable national estimates of contraceptive failure rates, corrected for the underreporting of abortions. The first phase of the project, carried out in 1987, was a survey of abortion patients that was designed to fill the need for information on contraceptive use at the time of conception for pregnancies ending in abortion.[7] A total of 9,480 women who visited a provider to have an abortion in 1987 filled out questionnaires that asked about their recent contraceptive use and about the pregnancy being terminated. The inquiry also covered a variety of demographic and socioeconomic characteristics that parallel information obtained from NSFG respondents.

The methodology for linking the 1987 AGI survey data with NSFG data has been developed and tested using the results of the 1982 NSFG. We report here on the substantive results of this second phase of the project. New corrected estimates of 12-month contraceptive failure rates are presented here and compared to the uncorrected results of the original analysis based on the 1982 NSFG. The contraceptive use data from the supplementary survey will ultimately be used to calculate use-failure rates from the fourth round of the NSFG, which was fielded by NCHS early in 1988.

The linking of the 1982 NSFG and the 1987 AGI survey for the purpose of calculating first-year failure rates was done at the aggregate level (i.e., on sets of cases sharing given characteristics, not on an individual case basis).[8] For each subgroup of women, the number of contraceptive failures that occurred within 12 months of the initiation of method use and that were reported to have led to abortion were deleted from the NSFG data, and the corresponding figure from the 1987 AGI survey was substituted. The 1987 data were weighted to match the number and the composition (by age, race, marital status and contraceptive use) of the women who obtained abortions during the 1982 NSFG observation period. The new total of births, abortions and miscarriages thus represents the true number of pregnancies to be used in the numerators of the first-year failure rates.

For the entire 1982 NSFG sample, the overall number of abortions relevant to the calculation of first-year failure rates was 2.7 times larger than the comparable reported number, which amounts to a 44 percent increase in the total number of failures that led to a birth, miscarriage or abortion during the first year of method use. However, the counts of months of exposure to the risk of failure that make up the denominators of the failure rates were not corrected for any changes implied by the introduction of the new data in the numerators.†

During the linking process, three important problems emerged. First, the assumption that the data on contraceptive use collected in the two surveys are comparable appears to be open to question. Despite the effort made to conform the 1987 AGI survey as closely as possible to the NSFG questionnaire, the conditions of the interview and the nature of certain questions inevitably differed. Detailed comparisons suggested that there may be some bias in one or both of the surveys, principally that contraceptive use at the time of the conception of a pregnancy that ended in abortion may have been underreported in the 1982 NSFG, overreported in the 1987 survey, or both. Because we lacked any way to evaluate such a bias, however, no adjustment was attempted.

Second, for every category in a cross-classification to which a contraceptive failure from the 1987 AGI survey is being attributed, there must be some corresponding interval of exposure from the 1982

**Table 1. Percentage of all abortions occurring between January 1, 1979, and July 1, 1982, that were reported in the 1982 NSFG, by age, according to race**

| Age | Total | Race | |
|---|---|---|---|
| | | White | Nonwhite |
| **Total** | **48** | **55** | **27** |
| <20 | 41 | 44 | 35 |
| 20–24 | 44 | 54 | 21 |
| 25–29 | 52 | 58 | 38 |
| 30–34 | 73 | 91 | 36 |
| ≥35 | 42 | 57 | 8 |

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*The histories actually extended up to the date of interview in late 1982, but the data utilized in this study were cut off at the end of June 1982 to ensure that by the time of the interview, respondents would have been aware of pregnancies that were conceived toward the end of the observation period.

†It has been argued that the effect on the denominators would be expected to be quite small (see: C. R. Hammerslough, "Summary of a Method to Correct Contraceptive Failure Rates for Abortion Under-Reporting," unpublished manuscript, 1987)

**Table 2. Percentage of women experiencing contraceptive failure during the first 12 months of use, by method, according to marital status, race and age**

| Marital status, race and age | Pill | Condom | Diaphragm | Rhythm | Spermicides | Other methods |
|---|---|---|---|---|---|---|
| UNMARRIED | | | | | | |
| **White** | | | | | | |
| <20 | 9.3 | 13.3 | 12.4 | 28.8 | 35.0 | 34.0 |
| 20–24 | 5.9 | 22.5 | 22.5 | 24.3 | 38.7 | 18.4 |
| 25–34 | 3.4 | 12.4 | 12.5 | 14.2 | 28.8 | 10.7 |
| 35–44 | 2.2 | 3.9 | 12.0 | 7.3 | 11.0 | 16.7 |
| **Nonwhite** | | | | | | |
| <20 | 18.1 | 22.3 | 35.5 | 34.1 | 34.0 | 61.5 |
| 20–24 | 11.7 | 36.3 | 57.0 | 28.9 | 37.6 | 37.3 |
| 25–34 | 6.7 | 20.9 | 35.8 | 17.2 | 27.9 | 23.0 |
| 35–44 | 4.5 | 6.8 | 34.7 | 8.9 | 10.6 | 34.3 |
| MARRIED | | | | | | |
| **White** | | | | | | |
| <20 | 8.0 | 11.4 | 10.6 | 25.1 | 30.6 | 29.8 |
| 20–24 | 5.0 | 19.5 | 19.4 | 21.1 | 34.0 | 15.9 |
| 25–34 | 2.9 | 10.6 | 10.7 | 12.2 | 25.1 | 9.2 |
| 35–44 | 1.9 | 3.3 | 10.3 | 6.2 | 9.4 | 14.4 |
| **Nonwhite** | | | | | | |
| <20 | 15.6 | 19.3 | 31.1 | (29.8) | 29.7 | (55.5) |
| 20–24 | 10.0 | 31.8 | 51.2 | 25.2 | 33.0 | 32.8 |
| 25–34 | 5.8 | 18.0 | 31.3 | 14.8 | 24.3 | 19.9 |
| 35–44 | 3.9 | 5.8 | 30.3 | 7.6 | 9.1 | 30.0 |

Note: The model included method, duration of use, age, race, marital status and the interactions of method with age and with race. Parentheses indicate cells for which there were no actual observations.

NSFG data. Although there is information in both surveys on numerous background characteristics, the need to ensure against there being any abortion attributed to a subgroup with no reported exposure means that only three or four variables can be considered simultaneously. The analysis is consequently broken down into several parts, in which we first examine a basic model and then study variants of the model that include particular variables of interest.

The third concern relates to the lapse of five years between the 1982 NSFG and the 1987 AGI survey. Although the 1987 AGI abortion data were adjusted for changes over time in the composition of abortion patients, shifts in the pattern of contraceptive use (which are particularly critical to the correction procedure) could be only partially accounted for because there are no satisfactory pre-1987 contraceptive use data specific to women obtaining abortions. Consequently, the corrected failure rates calculated from the 1982 NSFG are subject to a substantial degree of uncertainty. This potential source of error will be reduced in the analyses of the 1988 NSFG, so a detailed evaluation of the impact of the correction procedure must be postponed to that phase of the project.

## Model Fitting

The study reported in this article follows other recent research in using log-linear hazards modeling to derive the proportions of women using each method who experience contraceptive failure during the first 12 months of use.[9] Maximum likelihood estimates of the parameters of the models were computed through an iterative process that uses the data set efficiently* The input data for all the models tested consisted of the counts of failures and months of exposure from the 1982 NSFG, with the corrected counts of failures that led to abortions substituted from the 1987 AGI survey. For purposes of model estimation, the 1982 NSFG case weights were ignored.

Two variables—method of contraception and duration of method use—are essential for the calculation of contraceptive failure rates. In the basic model, the method categories were the pill, the condom, the diaphragm, spermicides, rhythm and other methods. Sterilization was excluded because failures following sterilization are rare; the IUD was excluded because the withdrawal of most forms of the device from the market in the years after 1982 greatly increased the uncertainty of estimating the correct number of abortions from the 1987 AGI survey. Spermicides included foam and suppositories; the sponge, which first appeared on the market after 1982, was also placed in this category in the 1987 AGI data. The residual category of "other" methods refers mainly to withdrawal and douche, plus miscellaneous methods mentioned by a few respondents. Pregnancy rates for nonusers were not calculated because nonusers are probably selected for subfecundity and reduced exposure to the risk of conception, which leaves the meaning of any comparison between such rates and use-failure rates unclear.

Duration of use was divided into four categories—one month, 2–3 months, 4–6 months and 7–12 months. The breakdown into intervals of increasing length was designed to take into account the curvilinearity in the relationship of the probability of failure to the time spent exposed to the risk of failure. The likelihood of failure is commonly observed to decline rapidly during the very early months of use and to level off thereafter. Results are shown in terms of 12-month failure rates cumulated over the four duration categories.

In addition to these two variables, the basic model included age, race and marital status. Age was categorized into four groups: under 20,† 20–24, 25–34 and 35 or over. Race was a dichotomous variable composed of whites and nonwhites, as was marital status, which was separated into those who were unmarried (whether they were never married, separated, divorced or widowed) and those who were currently married. The first variant of the basic model included age, marital status and a variable combining Hispanic ethnicity with race in three categories—non-Hispanic white, non-Hispanic nonwhite and Hispanic. The second variant of the model included age, race, marital status and a dichotomous variable representing poverty status—family income equal to or greater than 200 percent of the federal poverty level and family income less than 200 percent of poverty level.‡ To accommodate the additional breakdowns in these two variants of the model, method and age were collapsed into fewer categories.

A third variant of the model included age, race, marital status and religion. Because certain religious denominations, especially Catholicism, specifically oppose abortion and, to some extent, even contraception, one might expect to see a vari-

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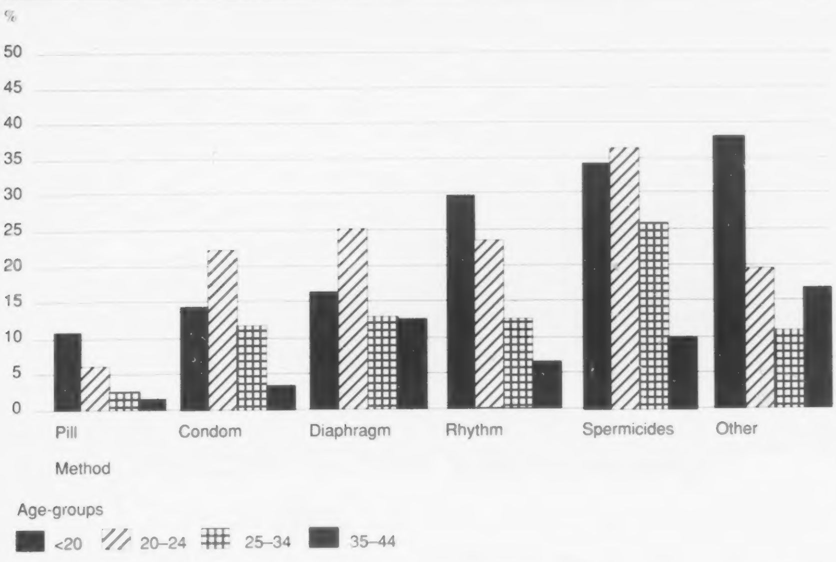
*The GLIM computer package was used. Significance at the $p<0.05$ level, based on the chi-square test, was the criterion for evaluation of individual variables.

†Preliminary analyses showed no significant differences between those under 18 and those aged 18–19, or between those aged 25–29 and 30–34.

‡In 1987, the federal poverty level for a family of four was $11,611 (see: U.S. Bureau of the Census, "Poverty in the United States, 1987," *Current Population Reports*, Series P-60, No. 163, Washington, D.C., 1989).

**Figure 1. Percentage of women experiencing contraceptive failure during the first 12 months of use, by age and method, standardized by race and marital status**



ation by religion in the underreporting of abortion, as well as in the propensity to experience contraceptive failure. Religion was entered as a dichotomous variable dividing Catholics from non-Catholics. However, the findings indicated that religion as defined in those terms did not contribute significantly to the explanation of variance in the probability of failure, so the results for that model are not presented. It is unclear how the absence of effects for religion should be interpreted. The simple dichotomy may have obscured differences that might have been found were a more detailed classification of religion possible. Problems with the data on religion may also have affected the results.*

An examination of all first-order interactions (instances in which the effects of a given variable differ among the categories of another variable) revealed that the interactions between method and age and between method and marital status each were significant on their own, but neither was significant once the other was included in the model. This finding shows that the links between method and each of these two variables, as determinants of the probability of failure, reflect to a large extent the close association between age and marital status themselves. Only one of the two interactions needed to be included in the model, and as they were of approximately equal significance, the age-method interaction was selected arbitrarily. The interaction between method and race was consistently significant and was included in all models. Finally, in the first variant of the basic model, the interaction between the ethnicity/race variable and marital status was also significant and was included in that model.

### Variations in the Risk of Failure

Table 2 (page 105) presents, for the basic model, the estimated percentages of women who experienced contraceptive failure within the first 12 months of use of each method, for every combination of age, race and marital status. For each method, the proportion failing ranged widely by subgroup: Two percent of white pill users aged 35–44 fail in the first year (both unmarried and married), compared with 18 percent of unmarried, nonwhite pill users under age 20. Among users of "other" methods, nine percent of married whites aged 25–34 experience an accidental pregnancy during the first year of use, compared with over 60 percent of unmarried, nonwhite teenagers. (It should be kept in mind that the number of actual observations for some subgroups may be very small; the percentages for subgroups for which there are no observations at all are given in parentheses.)

The age differences shown in Table 2 are highlighted in Figure 1, where the effects of race and marital status on the age-specific proportions failing have been eliminated by standardization. The likelihood of contraceptive failure has generally been found to decline with rising age, and among users of the pill and users of rhythm this pattern in fact prevails. Among users of the condom and users of spermicides, however, failure rates at ages 20–24 are higher than those among teenagers, although they decrease sharply thereafter. The failure rates associated with diaphragm use rise from the youngest age-group to ages 20–24, but after age 24 they remain steady at a level only a little below that seen among teenagers.

The overlapping effects of age and marital status noted earlier may help to explain the variation across methods in the differences between the failure rates of adolescents and those of users in their early 20s. Teenage users of the condom, spermicides and the diaphragm could well be largely unmarried women who have sex relatively infrequently. If so, their lower intensity of exposure to the risk of pregnancy would tend, in and of itself, to lower failure rates and might outweigh the opposing effect of youth. The pill, on the other hand, may appeal especially to those adolescents who are in regular sexual relationships, whether they are married or unmarried; thus, the intensity of their exposure to risk would be more comparable to that of older women, permitting the expected relationship to emerge. Our inability to account adequately for variations in coital frequency remains a serious shortcoming of the present approach to measuring contraceptive failure.†

Although failure rates are generally higher among nonwhites than among whites, the size of the racial differential varies by method (see Table 2). For example, nonwhite pill users experience contraceptive failure about twice as often as do white pill users, and the ratio is as high as three to one among users of the diaphragm; it is also large among those using "other" methods. For the condom and rhythm, however, the racial differences are smaller, with nonwhite condom

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*In the 1987 AGI survey, an unexpectedly high proportion of respondents reported having no religious affiliation. It is possible that women are more likely to answer that they have no religion when such a question is posed in an abortion facility than when it is asked in surveys that take place under other circumstances.

†A partial investigation of this issue in 1985 that was based on data from the 1982 NSFG provided little support, however, for the hypothesis that unmarried women's exposure is overestimated (see: W.R Grady, J. Yagi and M.D. Hayward, "Contraceptive Use-Failure Among Women in the United States: January 1, 1979–July 1, 1982," final report to the Office of Population Affairs, Department of Health and Human Services, 1985).

**Table 3. Percentage of women experiencing contraceptive failure during the first 12 months of use, by method, according to marital status, Hispanic ethnicity and race**

| Marital status, ethnicity & race | Pill | Condom | Diaphragm | Other* |
|---|---|---|---|---|
| **Unmarried** | | | | |
| Non-Hispanic white | 6.1 | 15.7 | 17.2 | 32.5 |
| Non-Hispanic nonwhite | 11.5 | 23.7 | 42.0 | 35.5 |
| Hispanic | 12.8 | 44.5 | 22.9 | 52.5 |
| **Married** | | | | |
| Non-Hispanic white | 3.4 | 11.2 | 13.2 | 28.6 |
| Non-Hispanic nonwhite | 8.4 | 22.4 | 42.9 | 39.6 |
| Hispanic | 4.2 | 19.6 | 9.4 | 28.8 |

*Includes spermicides and rhythm, as well as "other" methods.

Note: The model included method, duration of use, age, Hispanic ethnicity/race, marital status, the interactions of method with age and with Hispanic ethnicity/race and the interaction of Hispanic ethnicity/race with marital status. The results shown are standardized by age.

users experiencing contraceptive failure about 75 percent more often than whites and nonwhite rhythm users experiencing contraceptive failure only about 25 percent more often than white users. White and nonwhite women who use spermicides are about equally likely to experience a pregnancy in the first year of use.

Marital status does not have a large independent effect on the probability of failure, but it was retained in the basic model because its interactions with method and with the Hispanic/race variable were significant. The rates among married women are about 15 percent lower than are those among unmarried women of both races and in all age-groups. The small size of the effect observed for marital status may well be due to data inadequacies: The combination in the "unmarried" category of never-married women with those who were separated, widowed or divorced resulted in a group that was probably quite heterogeneous with respect to their risk of contraceptive failure; unfortunately, it was impossible to break down this data set in any more detailed manner. The problem of variations in coital frequency is relevant here as well.

## Ethnicity and Poverty Status

Results of the first variant of the basic model, in which the racial dichotomy is expanded to distinguish women of Hispanic ethnicity, are presented in Table 3. Only four method categories could be considered; spermicides and rhythm are included with "other" methods. We also had to reduce age to three categories (under 20, 20–24 and 25 or over); the effects of age were similar to those found for the basic model, and they were removed from the estimates shown in Table 3 by means of standardization. Because the effect of the variable combining race and Hispanic ethnicity differed by marital status, the percentages experiencing contraceptive failure are shown separately for the two marital-status groups.

Among unmarried women, both non-Hispanic nonwhites and Hispanics are more prone to contraceptive failure than are non-Hispanic whites. Hispanic pill users have nearly the same failure rate as non-Hispanic nonwhites, while the failure rates among Hispanic users of the condom and "other" methods are much higher than are those among non-Hispanic nonwhite users, and Hispanic diaphragm users experience failure only half as often as do their non-Hispanic, nonwhite counterparts.

Failure rates among married Hispanics, on the other hand, are uniformly lower than those among married non-Hispanic nonwhites, and married Hispanic diaphragm users experience contraceptive failure even less often than do married non-Hispanic whites who rely on that method. In the case of the condom, however, the failure rate among Hispanics is much closer to that among non-Hispanic nonwhites than to the rate among non-Hispanic whites.

The relatively poor use-effectiveness of the condom (a male method) among both unmarried and married Hispanics is noteworthy. On the other hand, non-Hispanic nonwhites in both marital-status categories appear to experience much more difficulty than other groups in using the diaphragm.

Table 4 shows the results derived from the second variant of the basic model, according to poverty status. Five method categories are distinguished, including rhythm; spermicides were combined with "other" methods. Age was reduced to the same three groups as in the first variant of this model. Because the effects of the poverty variable proved to be constant across all categories of age, race and marital status, only one set of rates, standardized by all of these variables, is shown for each poverty-status group. Women with family incomes that are less than twice the federal poverty level experience contraceptive failure around two-thirds more often than do women with higher incomes, regardless of the method they are using. This elevated rate among poor women probably results from many factors that affect their ability to use methods consistently and correctly, such as little education and limited access to contraceptive services and supplies.

**Table 4. Percentage of women experiencing contraceptive failure during the first 12 months of use, by method, according to poverty status**

| Poverty status* | Pill | Condom | Diaphragm | Rhythm | Other† |
|---|---|---|---|---|---|
| <200% | 8.1 | 20.7 | 23.4 | 25.6 | 33.1 |
| ≥200% | 4.3 | 12.9 | 14.7 | 15.3 | 21.0 |

*As percentage of the federally designated poverty level.

†Includes spermicides, as well as "other" methods.

Note: The model included method, duration of use, age, race, marital status, poverty status and the interactions of method with age and with race. The results shown are standardized by age, race and marital status.

## Method-Specific Failure Rates

Summary estimates of the proportions of women using each method who experience contraceptive failure during the first year of use, as established by this study, are shown in the first two columns of Table 5 (page 109). The rates in the first column are unstandardized; those in the second column are standardized by age, race and marital status.* Both sets of results are derived from the basic model, using the rates for subgroups that were given in Table 2. The unstandardized rates show the probability of failure given that the women who use each method differ with respect to age, race and marital status; hence, they reflect the experience of the population that actually uses each method. The standardized rates show the probabilities of failure once the effects of differences in the composition of users with respect to the three underlying characteristics have been eliminated. The latter approach thus places the comparison among methods on a common basis.

Both sets of figures show the pill to have by far the lowest failure rate. The rate of just over six percent in the first column drops slightly after standardization, indicating that women from subgroups with above-average failure rates are more heav-

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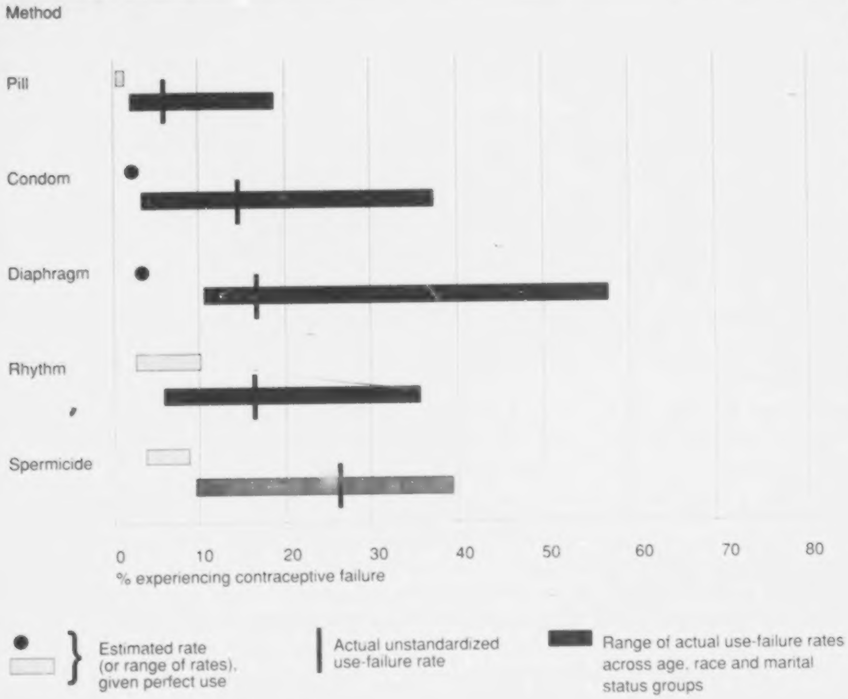
*Unstandardized failure rates have been calculated based on the distributions of months of exposure to the risk of conception, by age, race and marital status, observed for each method. Standardized rates have been calculated assuming that the distribution of the number of months of exposure by age, race and marital status is the same for every method as that observed for users of all methods together. In both cases, the NSFG case weights were used when the underlying distributions of months of exposure were calculated, in order to obtain results that can be interpreted as describing the nation's population.

**Figure 2. Estimated contraceptive failure rates given perfect method use, and observed use-failure rates, by method**



Source: **Perfect use rates**—reference 1.

ily represented among pill users than among all method users. Failure rates for the condom, the diaphragm and rhythm follow in increasing order. Users of these methods tend to belong to subgroups characterized by relatively low failure rates, so the removal of the impact of differences in the underlying characteristics of users produces higher rates after standardization. This effect is more pronounced for the diaphragm and for rhythm than it is for the condom. Spermicide use is associated with the highest failure rates of any of the methods, by a considerable margin: Twenty-six percent of spermicide users experience failure during the first year of use, and this proportion would rise to 30 percent if these women had the same characteristics as users of all methods. The failure rates among women using methods included in the residual category of "other" are higher than for most of the above methods, but are well below those among women using spermicides.

Unstandardized use-failure rates uncorrected for the underreporting of abortion, as calculated by Grady and colleagues, are shown in the third column of Table 5.[10] The new AGI failure rates are in all cases higher than the uncorrected rates (by 37 percent, on average). The effect of the adjustment for abortion underreporting varies by method, however, from 10 percent for the diaphragm to over 60 percent for spermicides, as can be seen in the fourth column of Table 5.*

Prior to the 1982 NSFG, studies of contraceptive failure had attributed the highest failure rate of any method to rhythm.[11] It was somewhat surprising, therefore, that the unstandardized use-failure rate for rhythm was less than the rate for the diaphragm, and that one analysis of the 1982 NSFG data found rhythm's failure rate to be at a level closer to that of the condom.[12] Grady's standardized estimates indicated that women were slightly more likely to fail when using rhythm than when using the diaphragm. Both the unstandardized and standardized estimates of the first-year failure rate for rhythm, corrected for underreporting of abortion in this study, are just a little higher than those of the diaphragm. The possibility that this low rate could have come about because rhythm users are particularly reluctant to report abortions now seems to have been ruled out. By inference, these findings strengthen the principal alternative explanation that the ongoing decline in reliance on the rhythm method during the 1970s and early 1980s must have been accompanied by an increase in the proportion of rhythm users who were highly motivated and capable of practicing the method successfully, in the proportion who were less fecund or in the proportion who were unwilling to admit contraceptive failure. An accompanying shift toward reliance on more sophisticated forms of rhythm may also have contributed to increased success with this form of family planning.

## Conclusion

Data from a survey of abortion patients conducted by the AGI in 1987 have been used to calculate contraceptive failure rates from the 1982 NSFG that are corrected for the underreporting of abortion. Methodological problems encountered in linking the two surveys introduce some uncertainty into the results, and precise comparison of the new rates with those previously calculated from the 1982 NSFG is not possible. The results clearly indicate, nevertheless, that the correction for th underreporting of abortion raises the rate substantially over the previously published, uncorrected rates.

For the six categories of methods covered, the suggested increase in standardized failure rates averages more than 3 percent over the rates calculated withou

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*Grady's adjustment for the underreporting of abortion by subgroup, with the two marital status groups combined, produced standardized use-failure rates of 4.4 percent for the pill, 12.8 percent for the condom, 20.0 percent for the diaphragm, 18.4 percent for rhythm, 21.2 percent for spermicides and 18.0 percent for "other" methods. Comparability between the standardized and corrected rates calculated in this study and in Grady's research is compromised by differences in approach, even though the rates were standardized in analogous ways. For example, Grady's analysis of failure rates included the IUD among the methods examined, and rates among nonusers were calculated as well. That analysis was also performed separately for married and for unmarried women. Besides method and duration, the model for married women included age, contraceptive intention, parity and income, and that for married women included the same variables plus race. Grady's rates are generally lower than those found in the AGI study, implying that they were estimated based on a small effect of underreporting, especially for the pill, th condom and spermicides. The AGI rates incorpora direct estimates of the corrected numbers of abortion for each method, which may provide greater accurac but this cannot be demonstrated empirically. At th very least, the disparity demonstrates the magnitu of the problems inherent in accurately estimati contraceptive failure rates in the absence of good da on abortion.

**Table 5. Percentage of women who experience a contraceptive failure during the first 12 months of use, both corrected and uncorrected for abortion underreporting, and the ratio of the corrected and uncorrected percentages, all according to method**

| Method | Corrected | | Uncorrected | Ratio (1/3) |
|---|---|---|---|---|
| | Unstandardized (1) | Standardized* (2) | Unstandardized† (3) | (4) |
| Pill | 6.2 | 5.6 | 4.6 | 1.35 |
| Condom | 14.2 | 15.7 | 9.7 | 1.46 |
| Diaphragm | 15.6 | 18.3 | 14.2 | 1.10 |
| Rhythm | 16.2 | 19.1 | 12.6 | 1.29 |
| Spermicides | 26.3 | 30.0 | 19.1 | 1.38 |
| Other | 22.2 | 19.3 | 13.8 | 1.61 |

*By age, race and marital status.

†Results for married and unmarried women were combined on the basis of their respective proportions of months of exposure (see: reference 5, Tables 2 and 4).

allowing for the underreporting of abortion, and varies substantially by method. The new estimates of the proportion of actual users of each method who experience an accidental pregnancy during their first year of contraceptive use (the unstandardized rates) are six percent for the pill, 14 percent for the condom, 16 percent for the diaphragm and for rhythm and 26 percent for spermicides. As Figure 2 shows, these are many times higher than the failure rates expected under conditions of perfect use.

Variations in the probability of failure among subgroups of the population have also been examined, and our findings are generally consistent with those of earlier analyses. The likelihood of failure declines with increasing age, but the relationship varies among methods. Differences in the age-pattern by method are most striking between the teenage years and ages 20–24, partly a reflection of the association between age and marital status. Nonwhites tend to fail more often than whites, and the strength of this relationship also varies by method. Marital status appears to have less bearing on failure rates than age or race, except that it is linked to marked differences in failure rates among non-Hispanic whites, non-Hispanic nonwhites and Hispanics. Whatever method they are using, poor women also appear much more prone to failure than women with higher incomes.

The range in use-failure rates across subgroups of women depends on the subgroups being studied, but it is often quite wide. The narrowest range found in the basic model used for this analysis (in which age, race and marital status were considered) was among pill users; 2–18 percent experienced contraceptive failure in the first 12 months of use (see Figure 2). The widest range (10–57 percent) was found among diaphragm users. To some extent, these variations among women of certain ages and marital statuses may reflect biological differences in fecundity and in exposure to intercourse, but such differences are unlikely to account for such wide divergences in failure rates, either among users of a particular method or between users of different methods. Rather, these variations may be related to differences in characteristics that affect the consistency and correctness with which certain contraceptive methods are used—such as the type of sexual relationship, attitudes about pregnancy or about the method, the degree of motivation to avoid pregnancy and the amount of knowledge on how to use the method. Analyses like this one, which examine data by social and demographic characteristics, can help identify the types of women most likely to experience problems in practicing contraception effectively, but more research is needed if we are to discover why such women have problems and what sort of help they need to become more effective users of the currently available methods.

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# Nonvoluntary Sexual Activity Among Adolescents

*By Kristin Anderson Moore, Christine Winquist Nord and James L. Peterson*

## Summary

Data from the 1987 round of the National Survey of Children indicate that seven percent of Americans aged 18–22 have experienced at least one episode of nonvoluntary sexual intercourse. Women were more likely than men to report having had such an experience, with just under half of all nonvoluntary experiences among women occurring before the age of 14.

Multiple classification analysis reveals that white women who had lived apart from their parents before age 16, those who had been brought up in poverty, those who had had a physical, emotional or mental limitation when they were young, those whose parents had been heavy drinkers, those whose parents had used illegal drugs and those whose parents had smoked cigarettes when they themselves were teenagers were at significantly greater risk for experiencing sexual abuse. Six percent of young white women with no risk factors, nine percent of those with one, 26 percent of those with two, and 68 percent of those with three or more had been sexually abused before or during adolescence.

## Introduction

Although numerous studies have focused on estimating the incidence of early sexual activity and on describing trends in the age at initiation of intercourse,[1] little attention has been paid to the circumstances surrounding early sexual activity. In particular, the extent to which early intercourse is nonvoluntary has never been examined using a nationally representative sample of young Americans.[2] The occurrence of nonvoluntary sex among young people may have the effect of lowering the age at sexual initiation below what it would otherwise be. Furthermore, children and adolescents who are unable to defend themselves against sexual abuse are probably equally unable to protect themselves from pregnancy or venereal disease. Thus, exploring this issue may yield some insights into why some adolescents, particularly those who become sexually active at very young ages, are slow to initiate contraceptive use.

> **"If the prevention of pregnancy and disease is difficult for adults, the obstacles to rational, prophylactic behavior among children and adolescents exposed to nonvoluntary sex seem almost insurmountable."**

In this article, we use nationally representative data to estimate the proportion of Americans who experience nonvoluntary intercourse during childhood and adolescence, according to race and gender. We also contrast life-table estimates of age at initiation of intercourse when only voluntary sex is considered with that when nonvoluntary sex is included as well. In addition, we contrast our estimates of age at first intercourse with those from two large, nationally representative surveys of youth of comparable ages in 1982, and explore a set of risk factors that influence the probablility of nonvoluntary sex among white females.

## Data

The analyses are based on data from the third wave of the National Survey of Children (NSC) conducted in 1987, Cycle III of the National Survey of Family Growth (NSFG) carried out in 1982, and the National Longitudinal Surveys of Labor Force Behavior of Youth (NLSY) for the years 1983–1985.

- *National Survey of Children.* The NSC has tracked a nationally representative sample of young people since 1976. The survey was originally designed to be a broad assessment of the social, physical and psychological characteristics of U.S. children and of the family and neighborhood circumstances in which they grow up. In 1976, the survey collected data via in-person interviews with 2,301 children aged 7–11 and with a parent or guardian living in 1,747 households; a response rate of 80 percent was achieved.

In 1981, a second wave of interviews that focused on the effects on children of marital conflict and family disruption was carried out among a subsample of the children interviewed in 1976. All children who had experienced the disruption of their families or who had been living in high-conflict families at the time of the 1976 survey were reinterviewed, as was a subsample of children who had been living in stable families at that time. Eighty-two percent of the designated respondents were interviewed, yielding a sample of 1,423 children between the ages of 12 and 16. Because of budgetary limitations, most interviews were conducted via telephone; in-person interviews were conducted among a small randomly selected subset. Analysis revealed no differences between children interviewed by telephone and those interviewed face-to-face.

The analyses in this article are based on data from the third wave of interviews, which were conducted by telephone in 1987. These interviews sought to follow up on experiences documented in the first two waves of the survey and collected data on early sexual and fertility behavior, edu-

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cational progress, employment and welfare experience, and psychological well-being.[3] The vast majority of respondents were aged 18–22; 30 respondents were 17, and 47 had turned 23. The response rate was 82 percent of the second wave sample.

Accumulated attrition from the NSC over the three waves has been considerable and, as in most longitudinal surveys, it has been greatest among youths from disadvantaged backgrounds. Although the data presented here are weighted to correct for the initial oversampling of blacks, for the subsampling by family type in the second wave of interviews, and for differing rates of sample attrition, the possibility exists that our analyses underestimate the true incidence of nonvoluntary sex among children and adolescents. Among respondents, nonresponse to individual items used in the analyses was virtually nil, and therefore cannot be considered a source of bias.

- *National Survey of Family Growth.* The NSFG is a primary source of data on patterns in U.S. fertility, infertility, reproductive health, contraception and fertility intentions. In 1982, in-person interviews were carried out among a nationally representative sample of approximately 8,000 women aged 15–44 of all marital statuses.[4] To match the ages of respondents interviewed in the 1987 NSC, we restricted our analysis of NSFG data to young women aged 18–22 in 1982.
- *National Longitudinal Surveys of Labor Force Behavior of Youth.* The primary objective of the NLSY, which has been carried out annually since 1979 among a nationally representative sample of young men and women, is to explore sources of variation in the labor-market behavior and experience of young Americans. However, a great deal of information is also collected on education, family background, fertility behavior, attitudes, aspirations and expectations.[5] As of 1986, 92 percent of the original sample of 11,406 individuals aged 14–21 in 1979 were still being interviewed. In 1983, 1984 and 1985, respondents were asked about their sexual activity and age at first intercourse; our analysis is based on responses to these retrospective questions.

**Table 1. Percentage* of 18–22-year-olds who reported ever having experienced nonvoluntary sexual intercourse†, by age, according to sex and race, 1987 NSC**

| Age | Females | | Males | |
|---|---|---|---|---|
| | White | Black | White | Black |
| <14 | 5.8 | 2.9 | 0.3 | 0.0 |
| 15 | 6.3 | 3.2 | 0.4 | 1.4 |
| 16 | 7.5 | 3.5 | 0.4 | 4.8 |
| 17 | 9.1 | 5.1 | 0.4 | 5.6 |
| 18 | 10.8 | 5.6 | 0.4 | 6.1 |
| 19 | 11.9 | 6.0 | 1.9 | 6.1 |
| 20 | 12.7 | 8.0 | 1.9 | 6.1 |

*Percentages are weighted.

†Some of the respondents who reported ever having had a nonvoluntary sexual experience may also have experienced voluntary sex by the same age.

## Nonvoluntary Sexual Activity

Overall, seven percent of all respondents interviewed in the 1987 NSC responded affirmatively to the question: "Was there ever a time when you were forced to have sex against your will, or were raped?" Because of the sensitive nature of this question, it is likely that respondent reports underestimate the true incidence of nonvoluntary sex. However, some respondents may also have redefined their voluntary sexual experiences with hindsight and reported them as having been nonvoluntary. With the exception of one white female, all respondents who reported having experienced nonvoluntary intercourse also reported having had sex voluntarily. Hence, we consider overreporting of nonvoluntary intercourse to be unlikely and believe this estimate to be a lower limit.

As Table 1 shows, life-table estimates of nonvoluntary sexual activity reveal substantial race and gender differences in the proportion of respondents who reported that they had ever been forced to have sex. Among women, whites were the most likely to report having been raped or coerced by age 20; nearly 13 percent indicated so. Eight percent of black women reported having had such an experience by age 20. It is possible that black women were less likely than whites to report nonvoluntary intercourse, or they may actually have been less likely to experience it, or they may define the experience differently.

Among men, the opposite pattern holds true: Black males were almost three times more likely than whites to report having been forced into sex (six percent vs. two percent). However, the occurrence of nonvoluntary sex among males aged 13 and younger is quite rare, whereas such experiences occur both during the teenage years and during childhood among females. The youngest reported age at nonvoluntary sex, reported by two female respondents, was age 3.

To produce estimates of the cumulative proportion of youths who had experienced intercourse by certain ages, additional life tables were computed. A comparison of the first two columns of Table 2 shows the effect of nonvoluntary sexual experiences on estimates of the proportions of young men and women who have become sexually experienced by each age from 14 to 20.* The first column was calculated using the youngest age at first intercourse, regardless of whether it was voluntary or nonvoluntary. The second column was calculated using data on age at first volun-

**Table 2. Cumulative proportions of young people who had experienced intercourse prior to given ages, by gender and race, according to life-table estimates based on three surveys**

| Gender, race and age | 1987 NSC* | | 1982 NSFG† | NLSY‡ |
|---|---|---|---|---|
| | Voluntary or nonvoluntary | Voluntary | | |
| WOMEN | | | | |
| **White** | | | | |
| 14 | 6.9 | 2.3 | 3.8 | 2.0 |
| 15 | 8.5 | 4.2 | 7.7 | 5.6 |
| 16 | 15.3 | 10.6 | 17.5 | 12.4 |
| 17 | 31.7 | 28.0 | 31.8 | 27.6 |
| 18 | 51.7 | 48.6 | 47.0 | 44.8 |
| 19 | 65.6 | 64.5 | 63.1 | 64.2 |
| 20 | 76.9 | 76.2 | 71.9 | 74.2 |
| (Unweighted N) | (441) | (441) | (1,256) | (3,082) |
| **Black** | | | | |
| 14 | 9.0 | 6.2 | 8.9 | 3.6 |
| 15 | 16.7 | 13.8 | 19.0 | 8.2 |
| 16 | 23.5 | 20.7 | 35.5 | 20.3 |
| 17 | 38.4 | 36.2 | 55.5 | 41.0 |
| 18 | 54.2 | 52.7 | 70.7 | 61.0 |
| 19 | 75.6 | 74.0 | 82.3 | 78.9 |
| 20 | 82.3 | 82.6 | 86.8 | 86.7 |
| (Unweighted N) | (124) | (124) | (718) | (1,378) |
| MEN | | | | |
| **White** | | | | |
| 14 | 4.1 | 4.1 | na | 6.8 |
| 15 | 11.8 | 11.8 | na | 12.4 |
| 16 | 20.6 | 20.6 | na | 22.9 |
| 17 | 41.6 | 41.6 | na | 42.8 |
| 18 | 59.2 | 59.2 | na | 60.5 |
| 19 | 74.7 | 74.7 | na | 75.6 |
| 20 | 82.1 | 82.1 | na | 82.1 |
| (Unweighted N) | (439) | (439) | | (3,666) |
| **Black** | | | | |
| 14 | 13.9 | 13.9 | na | 30.4 |
| 15 | 22.1 | 20.8 | na | 44.4 |
| 16 | 37.4 | 36.0 | na | 61.5 |
| 17 | 61.1 | 61.1 | na | 79.0 |
| 18 | 72.4 | 72.4 | na | 87.9 |
| 19 | 77.8 | 77.8 | na | 93.9 |
| 20 | 88.1 | 88.1 | na | 95.7 |
| (Unweighted N) | (117) | (117) | | (1,550) |

*Population consists of men and women aged 18–22 in 1987.

†Sample restricted to women aged 18–22 in 1982.

‡Sample consists of men and women aged 17–24 in 1982, aged 20–27 in 1985.

Note: na=not applicable.

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*The occurrence of first nonvoluntary sex may or may not have been the respondent's first sexual experience.

tary intercourse, regardless of whether or when nonvoluntary intercourse was experienced.

Clearly, among both black and white women at the younger ages, the proportions who had experienced intercourse are considerably higher when nonvoluntary sex is included in the estimate. Seven percent of white women reported having experienced intercourse by their 14th birthday, but only two percent reported having had a voluntary sexual experience by that age. By their 15th birthday, nearly nine percent of white women had experienced intercourse, but only four percent had had a voluntary experience. By age 19, there is little difference between the two estimates, suggesting that nearly all young white women who have been subjected to nonvoluntary sex have also initiated voluntary sexual activity by this age.

The proportion of black women who had experienced voluntary intercourse by age 14 is higher than that among whites of the same age. As is the case among white women, the proportion of blacks who had experienced intercourse during the early teenage years is higher if those who had experienced nonvoluntary sex are included in the estimate (nine percent by age 14, compared with six percent if only the data on voluntary intercourse are included). In addition, as is the case among white females, the two measures become nearly identical by the late teenage years.

Both white and black men are less likely than are women to report having experienced nonvoluntary intercourse. In fact, at every age, estimates of the proportion of white men who have experienced voluntary sex show them to be identical to estimates of the proportion who have experienced voluntary and forced intercourse, indicating that the few white males who have had nonvoluntary sex have almost always also experienced voluntary sex by about the same age. Among black males, some nonvoluntary sexual activity occurs in the absence of voluntary intercourse during the early teenage years, but it is uncommon, perhaps because black male teenagers report relatively high levels of early voluntary sexual activity. Thus, for both black and white males, any nonvoluntary sexual activity that they experience does not appear to occur earlier than voluntary activity.

## Implications for Estimating Levels Of Sexual Activity

Unlike the NSC, the NSFG and the NLSY did not contain a separate question on nonvoluntary sexual activity. Consequently, comparing data on age at initiation of intercourse from the three surveys is problematic. Undoubtedly, some NSFG and NLSY respondents reported their age at first intercourse without regard to the circumstances under which it occurred, and others may have reported their age at first voluntary intercourse only. On the other hand, we assume that the direct question about nonvoluntary intercourse contained in the NSC elicited some reports of sexual experience that would not have been volunteered had the question not been asked. Therefore, we would expect that the proportion of NSFG and NLSY respondents who reported initiating sexual activity at various ages would lie between the two measures of sexual activity used in the NSC.

Another concern in comparing data from different surveys is the fact that differences in survey design can affect substantive results.[6] For example, NLSY and NSFG respondents were interviewed in person, while NSC respondents were interviewed by telephone. Although the effects of using different interviewing techniques are unknown, some evidence exists that repeated personal contact with an interviewer in the NLSY lowered the reporting of sensitive topics.[7] On the other hand, attrition among respondents to the NLSY, which has been in existence only six years, has been lower than that among NSC respondents over its 11-year history. Since the 1982 NSFG was a one-time survey, it was not subject to attrition; however, the NSFG imputes missing data with a "hot deck" procedure* that tends to elevate reporting of sex at young ages.[8]

Because the three studies examined in this article focus on different aspects of behavior, we would expect that the data on age at intercourse would vary somewhat among studies. An excellent methodological study that compared data on age at first intercourse from the NLSY and two fertility surveys found discrepancies of around 20 percentage points for blacks and 10 percentage points for whites in the proportion of youths who had initiated sex by ages 16 or 17.[9] Reports of age at first intercourse in the fertility surveys tended to be fairly consistent; discrepancies arose primarily between them and the NLSY, the labor force survey. Since the NSC focuses on fertility, marriage and family, as well as on other issues such as employment and education, its estimates should fall in between the other two surveys.

In fact, the NSC estimates for whites are quite similar to those from the other surveys. Among whites, differences in the level of sexual activity across surveys are apparent only at the youngest age and only for females. This finding is in keeping with the observation that nonvoluntary sex often precedes voluntary sex among white females and that the inclusion of nonvoluntary sex tends to raise estimates of sexual experience for this subpopulation. However, the effect of nonvoluntary intercourse on overall estimates of the level of sexual experience is limited to the years of early adolescence.

Among white males, estimates across the surveys are quite comparable, which is again in keeping with the finding that few white males experience nonvoluntary sex and that those who do also initiate voluntary sex at about the same age.

On the other hand, the NSC estimates tend to be low for blacks, especially for black males. We suspect this may reflect attrition from the survey among more sexually active blacks. The fact that estimates for blacks in the NSC are lower than estimates from the other surveys leaves us unable to assess the extent to which overall estimates of the level of sexual activity among black teenagers are affected by the lack of questions in those surveys regarding nonvoluntary sex. However, if black teenagers most at risk are underrepresented in the NSC, then it is apparent that nonvoluntary sexual activity is a serious problem for black youth, since even in this sample eight percent of the females and six percent of the males reported sexual abuse by age 20.

## The Risk of Sexual Abuse

To determine which young people are most likely to experience nonvoluntary sex, we selected a number of variables from those available in the NSC that might predict such a likelihood and subjected them to multiple classification analysis. Unfortunately, small sample sizes permitted analysis of the NSC data on white females only. If questions on nonvoluntary sexual activity are included in future studies, our results can be tested on other populations using a wider array of variables. Nonetheless, even these initial results are instructive.

Among the variables included in the multivariate analysis were family characteristics, parental behaviors and characteristics of the young woman. Family characteristics that seemed likely to predict a young woman's risk of nonvoluntary intercourse or the family's reduced ability to protect their daughter from whatever risks she faced included poverty, a disrupted family structure, whether the respondent had lived apart from both parents before or during adolescence, whether the family had been on welfare during the respondent's childhood, whether the respondent's mother had been employed, whether the respondent's mother had been a teenager when her first child was born, and whether the respondent had an older sibling.

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*In such a procedure, the missing data are replaced by actual data from a respondent in the file who matches the first respondent on a set of background characteristics, such as age, sex, race and a measure of socioeconomic status.

Parental characteristics were included that assess the influence of personal, nonstructural factors as predictors of nonvoluntary intercourse. The measures of parental characteristics included in the analysis were whether one or both parents had been a heavy drinker and whether one or both parents had used illegal drugs such as LSD, marijuana or cocaine when the respondent was a child, and whether the parent who had been interviewed in 1976 reported having smoked cigarettes during his or her teenage years. (Smoking at a young age was considered to be a risk-taking behavior that might help to identify less cautious or less conventional parents.)

Two measures of individual characteristics believed to increase the young woman's vulnerability to sexual abuse were also examined—the respondent's score on a measure of verbal ability widely used as a measure of intellectual ability (the Peabody Picture Vocabulary Test) and the parent's response to a question asking whether the daughter had had a physical, mental or emotional limitation as a child that was severe enough to affect school or sports activities.

The results of the multiple classification analysis are shown in Table 3 as unadjusted proportions associated with each variable considered individually, and as adjusted proportions associated with each variable after all the other variables have been controlled.

Girls who had lived apart from both of their parents for four months or longer before age 16 were significantly more likely than those who had remained at home to have been the victims of nonvoluntary sex. Even after controlling for other factors, nearly half of the young women who had lived apart from their parents before age 16 were found to have been sexually abused. (Although these young women experience very high risk, it should be noted that they represent only a small proportion of all adolescents.) Because the NSC did not ask respondents whether the nonvoluntary sexual experience had occurred before, during or after the period of separation, it is not clear what circumstances placed these young women at risk; we can only conclude that living apart from both parents is associated with a higher probability of abuse. Although living apart from parents at older ages is also associated with an elevated risk, the degree of risk is considerably lower. Perhaps these older adolescents had a greater ability to avoid unwanted intercourse, or perhaps they were simply less exposed to the risk.

Having parents who are separated, divorced or never-married is associated with an elevated risk before the effects of other variables are controlled. However, when other factors, such as being separated from both parents, are controlled, the association is not significant. Similarly, having a mother who works and living in a family that receives welfare are both associated with an elevated risk when examined individually. However, when other variables, such as family income and living apart from both parents, are controlled, these associations are nonsignificant. (The presence of older siblings and having a mother who was a teenager when her first child was born were found to have only a slight and nonsignificant association with the likelihood of experiencing nonvoluntary intercourse; consequently, they were not included in the table.)

These results suggest that white girls who live apart from both of their parents during early adolescence have the highest risk of being subjected to nonvoluntary intercourse. In addition, girls who are raised in poverty are at increased risk of experiencing nonvoluntary intercourse, although being poor is only of borderline statistical significance once the influences of other factors are controlled.

**Table 3. The likelihood of experiencing nonvoluntary intercourse among white females, by selected characteristics, before and after controlling for other variables, 1987 NSC**

| Characteristic | Unadjusted | Adjusted | N (unweighted |
|---|---|---|---|
| **Separation from parents** | | | |
| Before age 16 | 0.57 | 0.49$^{****}$ | 15 |
| At ages 16 or 17 | 0.19 | 0.17 | 63 |
| Never before age 18 | 0.08 | 0.09 | 363 |
| **Family structure** | | | |
| Two parents present | 0.09 | 0.13 | 304 |
| Parents separated, divorced or never-married | 0.18 | 0.09 | 137 |
| **Maternal employment†** | | | |
| Yes | 0.15 | 0.13 | 310 |
| No | 0.06 | 0.09 | 131 |
| **Welfare-dependent†** | | | |
| Yes | 0.21 | 0.14 | 46 |
| No | 0.11 | 0.12 | 395 |
| **Poverty-level‡** | | | |
| Yes | 0.25 | 0.19$^{*}$ | 47 |
| No | 0.10 | 0.11 | 394 |
| **Parental heavy drinking†** | | | |
| Yes | 0.25 | 0.21$^{***}$ | 71 |
| No | 0.09 | 0.10 | 370 |
| **Parental drug use†** | | | |
| Yes | 0.38 | 0.29$^{****}$ | 37 |
| No | 0.10 | 0.10 | 404 |
| **Parental smoking§** | | | |
| Regularly | 0.31 | 0.17$^{**}$ | 31 |
| Occasionally | 0.25 | 0.22 | 49 |
| Never | 0.08 | 0.10 | 361 |
| **Physical, emotional or mental limitation** | | | |
| Yes | 0.27 | 0.24$^{**}$ | 32 |
| No | 0.11 | 0.11 | 409 |

$^{*}p\le0.10$. $^{**}p\le0.05$. $^{***}p\le0.01$. $^{****}p<0.001$.

†During respondent's preschool or elementary years.

‡At time of initial round of NSC, 1976.

§During parent's teenage years. Note: $R^2 = 0.19$.

The analysis reveals that certain parental characteristics are strongly associated with the risk of sexual abuse, both before and after controlling for other factors. The unadjusted proportions show that having one or more parents who drink heavily more than doubles the likelihood of sexual abuse, while having a parent who uses drugs nearly quadruples that risk. Although the risks associated with these two factors decline when other factors such as family structure and income are included, they continue to be significant predictors of abuse. Girls whose parent or parents had been heavy drinkers were two times more likely to have experienced nonvoluntary intercourse than were girls whose parent or parents had been abstemious; those whose parents had used drugs were three times more likely to have been sexually abused. Further, girls whose parent had smoked regularly or occasionally during his or her teenage years were also at increased risk of sexual abuse. The reason for this association is not clear, but it bears mentioning that the association holds even when measures of parental drinking and drug use are controlled.

Finally, the analysis reveals no association between our measure of intellectual ability and sexual abuse (not shown); however, young women who had had a physical, emotional or mental limitation during their childhood were twice as likely as those without such limitations to have been victims of sexual abuse.

The multiple classification analysis identified a number of distinct aspects of a young woman's life that are associated with an increased likelihood of sexual abuse. Even though several of these factors appear to have an independent association with the likelihood that the young woman has experienced nonvoluntary sex, it seems likely that girls exposed to at least one risk factor, such as parental drinking, are more apt than others to be exposed to other risks as well. In order to test this hypothesis, we examined the proportions experiencing nonvoluntary sex according to the number of risk factors to which they had been exposed. The risk factors used in this analysis were those six factors that bore a statistically significant association with sexual abuse in the adjusted model shown in Table 3, namely, parental heavy drinking, parental drug use, parental smoking as a teenager, physical, emotional or mental limitation on the part of the child, and living apart from both parents before age 16. Childhood poverty was also included, because it nearly reached statistical significance and it has clear substantive significance.

Table 4 shows the proportion of young white women who have ever experienced nonvoluntary sex according to the number of risk factors in their backgrounds. The probability of experiencing nonvoluntary intercourse is clearly and strongly related to the number of risk factors in the woman's background. While just under six percent of young women with no risk factors in their backgrounds had experienced nonvoluntary sex, the proportions rose to nine percent of those who had had one risk factor, 26 percent of those who had had any two risk factors and 68 percent of those who had had any three or more of the six risk factors.

**Table 4. Percentage of white females who had ever experienced nonvoluntary sexual intercourse, by the number of risk factors in the woman's background, NSC**

| Risk factors* | % |
|---|---|
| None | 5.7 |
| One | 9.4 |
| Two | 25.5 |
| Three or more | 67.8 |

*The six risk factors include parental heavy drinking, parental drug use, parental smoking as a teenager, having physical, emotional or mental limitations, living in poverty and living apart from both parents before age 16.

Note: Ordinal association is statistically significant at $p<0.0001$.

## Discussion

The United States is plagued with high rates of adolescent pregnancy and childbearing, a high incidence of venereal disease and an alarming increase in AIDS cases. Early exposure to sexual activity is a known risk factor for all of these problems. Increasing rates of early sexual activity have, in fact, been a factor in exacerbating each of them. It is true, of course, that individuals and couples can protect themselves against these risks; but consistent protective behaviors have been difficult to achieve among young adolescents. The data in this study illuminate one reason why some young people do not adequately protect themselves from pregnancy or disease: A small but important subgroup of children and adolescents enter sexual activity as victims forced to have sex against their will.

Even young women from advantaged family backgrounds seem to have difficulty managing to practice contraception at first intercourse. Young women from high-risk backgrounds can be expected to find that task even more daunting. If the prevention of pregnancy and disease is difficult for adults, the obstacles to rational, prophylactic behavior among children and adolescents exposed to nonvoluntary sex seem almost insurmountable.

Unfortunately, the National Survey of Children did not seek to determine the identity of sexual partners or whether the nonvoluntary sexual activity occurred once or over a period of time. In addition, no questions were asked about contraceptive use during these episodes, although under the circumstances, it seems unlikely that contraceptives were used. The need to further explore the circumstances surrounding episodes of nonvoluntary intercourse and the consequences of these experiences seems clear.

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# The Effectiveness of Contingency-Planning Counseling

*By Pearila Brickner Namerow, Norman Weatherby and Jacqueline Williams-Kaye*

## Summary

A longitudinal study assessed the effectiveness of contingency-planning counseling on contraceptive use and pregnancy outcomes among patients at a family planning clinic. Of 914 women enrolled in the study, 502 received traditional family planning counseling that focused on the provision of information and the selection of a contraceptive method, and 412 received contingency-planning counseling, which provided additional attention to possible problems that might arise with contraceptive use and the particular method selected.

Although contingency-planning counseling was favorably received by both patients and staff members, patients in the two groups did not differ significantly on most of the outcomes considered. The two counseling groups had remarkably similar rates of clinic continuation at both the six- and 12-month follow-ups and analogous patterns of contraceptive use. In an exception to this pattern, the six-month pregnancy rate was significantly reduced among contingency-counseled patients who had ever been pregnant. However, the effectiveness of the intervention in reducing the likelihood of unintended pregnancy was short-lived: At 12 months, the pregnancy rate among ever-pregnant women was the same for traditionally counseled patients as for those receiving contingency-planning counseling.

**Regardless of how their pregnancy ended, [previously pregnant women] who received contingency-planning counseling were significantly less likely than their traditionally counseled counterparts to become pregnant within six months.**

## Introduction

Family planning programs have been undeniably successful in assisting many women in the prevention of unplanned pregnancies.[1] One important component of such programs is counseling. Family planning counseling has traditionally focused on the dissemination of information about birth control and on the selection of a contraceptive method, following the guideline that clients be able "to arrive at a decision that reflects their considered self-interest."[2] Although a substantial body of research regarding the effectiveness of family planning programs has emerged over the past several years, little of the accumulated literature directly addresses the effectiveness of the counseling provided at family planning clinics. Nonetheless, many of the findings include recommendations that family planning programs incorporate more effective counseling strategies.[3]

In an effort to respond to the need for better counseling, we designed a project to evaluate the effectiveness of a counseling approach called "contingency planning." This counseling model is based upon the belief that family planning counseling needs to extend beyond the traditional model of information dissemination and assistance in decision-making. The new approach includes a focus during counseling on the patient's behavior and the circumstances she will face after she leaves the clinic with a method of contraception. It aims to help a patient consider and plan for contingencies—such as side effects, pressure from someone to stop using her method and financial difficulties in getting methods or care—that could potentially interfere with effective contraceptive use. We hypothesized that both counseling patients regarding the possible occurrence of such contingencies and developing plans with them for appropriate responses would lead to more effective contraceptive use.

Thus, in this study, contingency planning supplements traditional counseling by adding a focus on factors that will affect a woman's ability to maintain her decision to practice contraception over an extended period of time. The counselor and patient develop an individual plan for pregnancy prevention designed to help the client deal with problems that may influence effective use. The goal of contingency-planning counseling is to increase contraceptive and clinic continuation and avoid unwanted pregnancies by focusing not only on the individual's current perception of birth control, but also on her past experiences and projected experiences with the method selected.

To implement contingency planning, a "Pregnancy Prevention Plan" was developed, and a group of randomly selected clinic counselors was trained to use the plan during their counseling sessions. During the course of the study, only counselors trained to offer contingency-planning counseling did so, and those not trained in contingency-planning counseling offered only traditional counseling. The Pregnancy Prevention Plan contained five components. First, the patient was asked to articulate a pregnancy goal, such as "I want to become pregnant when I finish school" or "I do not want to become pregnant until my baby is three years old." Second, the woman's perceived probability of pregnancy—a measure of how vul-

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**Table 1. Percentage distribution of weighted sample, by social and demographic characteristics at enrollment in study, according to type of counseling received**

| Characteristics | Total (N=823) | Contingency planning (N=412) | Traditional (N=411) |
|---|---|---|---|
| **Age** | | | |
| ≤17 | 14.6 | 14.6 | 14.6 |
| 18–19 | 18.7 | 18.7 | 18.7 |
| 20–22 | 22.9 | 22.9 | 22.9 |
| ≥23 | 43.8 | 43.8 | 43.8 |
| **Ethnicity** | | | |
| Hispanic | 49.8 | 47.8 | 51.8 |
| Black | 40.8 | 42.0 | 39.6 |
| White | 5.2 | 6.5 | 4.0 |
| Other | 4.2 | 3.8 | 4.6 |
| **In school** | | | |
| Yes | 40.8 | 39.2 | 42.5 |
| No | 59.2 | 60.8 | 57.5 |
| **Last grade completed** | | | |
| ≤9 | 17.9 | 16.3 | 19.6 |
| 10–11 | 26.2 | 27.0 | 25.5 |
| ≥12 | 55.8 | 56.7 | 55.0 |
| **Married** | | | |
| Yes | 27.2 | 28.9 | 25.6 |
| No | 72.8 | 71.1 | 74.4 |
| **Receives public assistance** | | | |
| Yes | 51.0 | 53.4 | 48.5 |
| No | 49.0 | 46.6 | 51.5 |
| **Receives Medicaid** | | | |
| Yes | 47.9 | 50.7 | 45.0 |
| No | 52.1 | 49.3 | 55.0 |
| **Employed** | | | |
| Yes | 22.0 | 19.4 | 24.6 |
| No | 78.0 | 80.6 | 75.4 |
| **Ever pregnant** | | | |
| Yes | 73.2 | 75.6 | 70.9 |
| No | 26.8 | 24.4 | 29.1 |
| **Contraceptive method selected** | | | |
| Pill | 57.3 | 57.2 | 57.4 |
| IUD | 22.1 | 23.1 | 21.2 |
| Diaphragm | 12.4 | 12.9 | 11.8 |
| Condom/foam | 8.2 | 6.8 | 9.6 |
| **Previous experience with method***** | | | |
| Yes | 63.5 | 58.0 | 69.1 |
| No | 36.5 | 42.0 | 30.9 |
| Total | 100.0 | 100.0 | 100.0 |

***Difference between counseling groups is significant at $p<0.001$.

nerable she thinks she is to pregnancy—was determined. Third, the specific contraceptive method selected, the length of time for which it would be used, and what the patient would need to do to use it effectively were specified. Fourth, the contingencies that might arise subsequently and interfere with effective contraceptive use were discussed. Finally, detailed plans for dealing with each contingency were outlined. The contingencies included side effects or other problems with the method; changes in the frequency of intercourse, including periods of abstinence; pressure from another person to discontinue use; a lack of financial resources to pay for supplies or clinic visits; and the development of a dislike for the method being used.

The Pregnancy Prevention Plan also included opportunities to specify in writing when the patient would next have contact with the counselor or make a clinic visit, what would be done if an appointment could not be kept, and how the counselor and clinic could help the client practice contraception effectively. Both the patient and the counselor signed the record, indicating that they had developed the Pregnancy Prevention Plan together, and patients retained a written copy of the plan. To accommodate the patient population at the research site, the clinic made the plan available in both Spanish and English.

## Methodology

Between March 1 and October 31, 1985, 914 family planning patients at the Presbyterian Hospital in New York City were enrolled as study participants. Those considered eligible for the study were new patients and those making a return visit who were not pregnant, did not want to get pregnant at the time, needed individual counseling and accepted a contraceptive method.

Patients were assigned to counselors based on counselor availability. Thus, if the counselor was trained in contingency planning, the patient received the intervention, and if not, she received the traditional counseling offered by the hospital. This procedure was as close to random assignment as was feasible within the clinic setting. However, the final sample included more clients who received traditional counseling (502) than who received contingency-planning counseling (412). The difference in sample size was due to the somewhat lengthier session required for contingency-planning counseling.

The prospective research design used to assess the effectiveness of this intervention spanned a one-year period for each participant. Data were collected at three points: at the clinic visit in which the patient was enrolled in the study, at six months after enrollment and again at 12 months. Trained interviewers conducted most of the follow-up interviews by telephone. Women who could not be reached were mailed an abbreviated version of the questionnaire. In addition, clinic records containing many of the important data were searched for women who did not respond to the telephone or mail surveys.

Although it was expected that the research design would produce comparable experimental and comparison groups, it did not address the higher volume of the Young Adult Clinic, which provides services to women ages 21 and younger. The resulting disparity in age between the two groups led to several differences: Traditionally counseled patients were more likely to be in school or employed and were less likely to be married and receiving public assistance or Medicaid. In addition, only two-thirds of the patients receiving traditional counseling had ever been pregnant, compared with three-quarters of the contingency-planning group.

To achieve a greater degree of comparability between the two groups, we weighted them by age, thus producing a sample of 411 traditional patients and 412 contingency-planning patients with identical numbers for each single year of age. We chose the most conservative approach of weighting the sample—down to 412 in each group rather than up to 502. Unless stated otherwise, the analyses in this article are based on weighted data.

Table 1 presents social and demographic characteristics of the sample, utilizing the weighted data. Given the equal age distribution, no significant differences with regard to key characteristics existed between the two groups. Reflecting the demographic profile of the area served by the hospital, approximately one-half of the study participants were Hispanic—48 percent of the contingency-planning group and 52 percent of the traditionally counseled group. Approximately 40 percent of each group was in school at the time of the enrollment visit. The majority of the participants had completed high school, but about 45 percent had not, and nearly one-fifth had nine or fewer years of education. Just over one-fourth of the clients were married.

About half of the women said that they were receiving public assistance, and a similar proportion reported receiving Medicaid. Nineteen percent of the contingency-planning group and 25 percent of the control group stated that they were unemployed. More than 70 percent of both groups had experienced at least one pregnancy. At the enrollment visit, 57 percent of the clients adopted the pill as their method of birth control, 22 percent selected the IUD and 20 percent decided to use barrier methods. A major difference between the contingency-planning group and the control group was that a significantly greater proportion of the latter had had prior experience with the method they selected.

Overall, follow-up data were obtained from 73 percent of both contingency-planning patients and traditionally counseled patients. Although data were collected from most women at both the six-month and 12-month intervals, women were also included in the follow-up analyses if data were available for only one of the two points in time. In the analyses that follow, data collected at the six-month interval are used, except for patients on whom data were only available at 12 months. A reliability check on some of the data showed that the results at six and 12 months were comparable.

Demographic characteristics of patients who were lost to follow-up did not differ from those on whom data were collected, with the exception of ethnicity. Of the 602 women who responded to follow-up interviews, 48 percent were Hispanic, 44 percent were black and the remainder were white or of some other ethnicity. Of the 221 women lost to follow-up, 55 percent were Hispanic, 33 percent were black and 12 percent were white or of some other ethnicity. Despite these overall differences, there were no significant differences in ethnicity between those reinterviewed and those lost to follow-up within either the contingency-planning or control groups.

### Counseling Results

The contraceptive contingencies considered in this project included generic contingencies that could occur to anyone, regardless of the method accepted, such as pressure from others to discontinue use and lack of funds with which to obtain supplies or make clinic visits. They also included method-specific contingencies, such as side effects related to the actual method in use.

On average, patients in this study experienced between two and three contingencies, regardless of method selected and counseling group. A change in the frequency of sexual activity, particularly decreases in such activity, was the most frequently mentioned generic contingency. Among pill users, the most common method-specific contingencies were shorter or lighter periods and weight gain. IUD users most often experienced increased bleeding and cramping. Among users of barrier methods, the two most frequently mentioned contingencies were not feeling like using the method and not having the diaphragm, condoms or foam available at the time of intercourse. The relatively high proportions of patients who reported the occurrence of these contingencies lends validity to the supposition on which contingency-planning counseling is based, that is, that patients need to be prepared with a repertoire of positive responses to problems.

Answers to questions designed to determine whether or not women had used their method correctly were analyzed according to counseling group, and the results for pill and IUD users are presented in Table 2. Among oral contraceptive users, correctness of use was measured by the frequency with which women said they had forgotten to take the pill and upon their behavior when they realized they had done so. A significantly higher proportion of the contingency-planning counseling group reported having taken the pill appropriately every day. About 57 percent of the control group had forgotten at least one pill, compared to 47 percent of the contingency-planning group.

Women who stated that they had forgotten to take one or more pills were then asked what steps they had taken with regard to forgotten pills. Eighty-nine percent of the contingency-planning group reported having taken the forgotten pills appropriately (by taking two pills the next day if they had forgotten one, or two pills for the next two days if they had forgotten two), compared with 68 percent of the traditional group. Thus, contingency-planning counseling appears to have had a positive effect upon correctness of use among pill users. A majority of the women had ever forgotten one pill (75 percent of the contingency-planning counseled group and 55 percent of the traditionally counseled group), and in these instances, about 98 percent of women in both groups had followed appropriate procedures for taking the forgotten pill. Among those who had ever forgotten two or more pills, however, patients who received contingency-planning counseling were more likely than the control group to have followed recommended procedures.

IUD users were asked about the frequency with which they had checked for the strings to their device. A higher percentage of women who received contingency-planning counseling than those who received traditional counseling reported having checked at least once per month (70 percent vs. 61 percent), although the difference is not statistically significant.

Correctness of use among diaphragm users was measured by answers to four questions addressing the frequency with which women had examined their diaphragm for holes, used jelly or cream along with their diaphragm, checked the positioning of the diaphragm, and left the diaphragm in for at least six hours following intercourse. Responses for each item were "every time you had intercourse," "most times you had intercourse," "some of the times you had intercourse," and "none of the times you had intercourse," and were scored 4, 3, 2 and 1, respectively. As Table 3 shows, the mean scores of the two groups did not differ significantly; on average, women reported having used their method correctly most of the time.

**Table 2. Percentage distribution of answers to questions regarding correct pill use and IUD use, by method used, according to type of counseling received**

| Method used and answer | Contingency planning | Traditional |
|---|---|---|
| **Pill** | | |
| Took pills every day* | (N=151) | (N=168) |
| Yes | 53.0 | 43.4 |
| No | 47.0 | 56.6 |
| Took forgotten pills appropriately** | (N=71) | (N=95) |
| Yes | 88.6 | 67.9 |
| No | 11.4 | 32.1 |
| **IUD** | | |
| Checked string appropriately | (N=59) | (N=56) |
| Yes | 69.5 | 60.9 |
| No | 30.5 | 39.1 |
| Total | 100.0 | 100.0 |

*Difference between counseling groups is significant at p<0.05.

**Difference between counseling groups is significant at p<0.01.

**Table 3. Mean scores on questions regarding correct use of barrier methods, by method used, according to type of counseling received**

| Method used and answer | Contingency planning | Traditional |
|---|---|---|
| **Diaphragm** | **(N=31)** | **(N=30)** |
| Total mean | 13.45 | 14.04 |
| Checked for holes | 3.35 | 3.35 |
| Used jelly/cream | 3.45 | 3.79 |
| Checked placement | 3.29 | 3.27 |
| Removed at appropriate time | 3.35 | 3.63 |
| **Condom with foam** | **(N=13)** | **(N=19)** |
| Total mean | 12.23 | 13.50 |
| Held condom to remove | 2.50 | 2.82 |
| Inserted foam at appropriate time | 2.56 | 1.89 |
| Used both methods | 1.82 | 1.84 |
| Used same condom* | 3.06 | 3.30 |
| Douched within six hours* | 2.43 | 3.03 |

*Reverse scoring.

**Table 4. Percentage distribution of recipients of contingency-planning counseling, by answers to follow-up questions about Pregnancy Prevention Plan**

| Question and answer | % |
|---|---|
| **Still have plan (N=321)** | |
| Yes | 57.0 |
| No | 43.0 |
| **Followed plan (N=183)*** | |
| Very closely | 50.3 |
| Somewhat | 32.8 |
| Not at all | 16.9 |
| **Used plan (N=228)** | |
| Once a month or more | 38.2 |
| Less than once a month | 25.0 |
| Never | 36.8 |
| **Recorded period (N=231)** | |
| Three or more times | 40.7 |
| Once or twice | 16.4 |
| Never | 42.9 |
| **Felt plan was helpful (N=206)** | |
| Very | 53.9 |
| Somewhat | 40.8 |
| Not at all | 5.3 |
| **Felt others would benefit (N=213)** | |
| Yes | 96.2 |
| No | 3.8 |
| Total | 100.0 |

*Question asked of those who still had the plan.

Note: The variation in the numbers who answered the last four questions is due to a combination of nonresponse and interviewer errors. Unfortunately, in some instances in which women said they no longer had the Pregnancy Prevention Plan, interviewers did not ask the remaining questions regarding utilization of the plan.

Five questions were formulated to assess the correct use of the combination of the condom and foam, with the same possible responses and scoring for each answer as those that measured correctness of use for the diaphragm. The questions concerned the frequency with which users of this combination of methods had held onto the condom as the penis was removed from the vagina, inserted foam no more than 20 minutes prior to intercourse, used foam and a condom together, used the same condom more than once, and washed or douched within six hours of having sex. (Washing or douching within this time period and using the same condom more than once were considered incorrect usage of the method and were scored in reverse, with a score of 4 going to those who had never done it and a score of 1 going to those who had done it at every act of intercourse.) Again, there were no significant differences between the two counseling groups regarding correct use, but the scores reflected more incorrect use than did those for the diaphragm. It is especially disturbing to note the infrequency with which the condom and foam were used together; contrary to the counseling regarding correct use, each group used the two together only some of the time.

Table 4 shows how patients who received contingency-planning counseling responded to it. Based on unweighted data, results from the follow-up interviews indicate that 57 percent of the women still had copies of their Pregnancy Prevention Plan, and that more than 80 percent of the women who still had the plan said that they had followed it very or somewhat closely. Approximately 38 percent of the women who were asked said that they used or referred to the plan once a month or more, and about the same proportion said that they had never used the plan. The majority of women asked said that, as suggested, they had recorded the dates of their menstrual periods on the plan at least once, and virtually all of those questioned said the plan was either very or somewhat helpful, and thought it would be beneficial to others. Thus, patient response to the intervention was favorable, and many clients made at least some use of the plan after leaving the clinic.

## Pregnancy Rate

Although the analysis was designed to measure the effects of contingency-planning counseling on contraceptive use and attitudes, we were primarily interested in determining whether the intervention had more of an effect than traditional counseling on the rates of clinic continuation, contraceptive continuation and unintended pregnancy. Measures of clinic continuation and unintended pregnancy were available for all patients through their clinic records, while measures of contraceptive continuation were only available for patients who were followed up by telephone or mail.

Overall, the results indicate that even though the intervention was moderately effective in achieving some of the goals relating to knowledge and practice that are described above, the primary outcomes of interest were not consistently affected. The results of bivariate analyses indicated that type of counseling was not significantly related to any of the dependent variables of interest. Since it was possible that other factors were suppressing these relationships, multivariate techniques were also used—ordinary least-squares regressions to test the effect of type of counseling on frequency of contraceptive use, and logistic regression to estimate the effect of type of counseling on clinic continuation, method use at last intercourse and pregnancy status at six and 12 months. Age is controlled for in the multivariate context, so these analyses use unweighted data.

**Table 5. Results of logistic regression analyses of likelihood of pregnancy within six months, by age, pregnancy history, contraceptive method and counseling group (N=846)**

| Variables | Logistic coefficient |
|---|---|
| Age | –0.0883** |
| Previous live births only | 2.0915** |
| Previous abortions only | 2.3121*** |
| Previous live births and abortions | 2.0124** |
| Method selected† | –1.1186*** |
| Counseling group | 1.646 |
| Counseling group by live births only | –1.8320* |
| Counseling group by abortions only | –2.1783* |
| Counseling group by live births and abortions | –1.6064* |
| Constant | –1.5478 |
| Model chi square (9 df) | 37.64*** |

*p<0.05 **p <0.01 ***p < 0.001

†0 = diaphragm or condom/foam; 1 = pill or IUD.

The logistic and ordinary least-squares regressions from the six-month and 12-month interviews indicate that the type of counseling did not have an independent effect upon clinic continuation, contraceptive use at last intercourse, frequency of contraceptive use during the month prior to follow-up, or frequency of contraceptive use during the six months prior to each follow-up. Indeed, patients who received traditional and contingency-planning counseling had remarkably similar rates of clinic continuation at both the six-month and 12-month follow-ups, and quite analogous patterns of contraceptive use.

The findings with regard to unintended pregnancy are somewhat more ambiguous. Patients who received contingency-planning and traditional counseling did not differ significantly with respect to the incidence of unintended pregnancy at either six or 12 months after counseling: Approximately seven percent of each group became pregnant within six months, and 15 percent of each group were pregnant within 12 months. (The very small number of women who experienced pregnancies and who said at follow-up that they had been trying or planning to get pregnant at that time were excluded from this analysis.) The factors predictive of pregnancy included age, previous pregnancy status and contraceptive method.

Results of more refined analyses incorporating interaction terms indicate, however, that the type of intervention had differential effects within certain subgroups, particularly among women who had ever been pregnant versus those who had not. Table 5 presents the results of logistic regression analyses that include the variables that were predictive of pregnancy within six months, along with interaction terms created by multiplying the counseling group variable by each of three dummy variables created to represent women's pregnancy histories. The three variables were whether the woman had had pregnancies resulting in only live births, only abortions or both live births and abortions. Women who had had no prior pregnancies were thus the omitted category. The results indicate that along with the other predictors of pregnancy, the interaction terms between each of these pregnancy history variables and type of counseling are all negative and significant.

Among previously pregnant women, regardless of how their pregnancy ended, those who received contingency-planning counseling were significantly less likely than their traditionally counseled counterparts to become pregnant within six months of counseling. Contingency-planning counseling thus appears to have been of more help than traditional counseling to the women who are known to be at greatest risk of unintended pregnancy—those with prior pregnancies.

Logistic regression allows us to estimate the likelihood that patients with varying characteristics will experience an unintended pregnancy. Such an exercise more concretely illustrates the effectiveness of contingency-planning counseling. For example, among women using the pill or the IUD who had experienced a pregnancy but were not receiving Medicaid, the probability of pregnancy within six months was significantly lower among contingency-planning patients (three percent) than it was among control patients (seven percent). Among users of barrier methods, the analogous figures are nine percent among contingency-planning patients and 18 percent among control patients. Thus, among a particularly high-risk group—women who had ever been pregnant—the experimental intervention reduced the likelihood of unintended pregnancy within six months of counseling by one-half. However, at 12 months, this difference disappeared. Thus, the effectiveness of the intervention in reducing the incidence of unintended pregnancy was short-lived.

## Discussion

The purposes of this project were to implement contingency-planning counseling and evaluate its effectiveness. At the outset, it was tempting to hope that each of the outcomes under consideration—clinic continuation, contraceptive use and pregnancy incidence—would be affected by this innovative counseling approach. The intervention was a cost-effective one, in that it did not entail the utilization of additional staff; rather, existing staff were trained in the new counseling procedures. Moreover, both trained clinic staff and patients who received the counseling had very favorable responses to it. It did, however, take longer to administer contingency-planning counseling than traditional counseling.

We have speculated considerably about why patients who received traditional and contingency-planning counseling did not differ on most of the outcomes we examined. Several possible reasons come to mind. One straightforward explanation is that the intervention was simply not strong enough to have an impact upon these behaviors. For many patients, contingency-planning counseling was a "one-shot" intervention, and simply may not have been powerful enough to affect the clinic attendance patterns and contraceptive behavior of the patient population at an inner-city clinic.

Another explanation may be related to the counselors who implemented the intervention. The results of a counselor-by-counselor analysis indicated that some counselors were considerably more effective than others, at least as measured by patient outcomes. When the patients of the two least effective contingency-planning counselors were removed from the analyses, the differences in many outcomes between the contingency-planning and control groups were more pronounced, but were still not statistically significant. Thus, these findings may present a less optimistic assessment of the intervention than would have been the case had all the counselors been uniformly skilled with the intervention. On the other hand, since there can be considerable variation in the quality and effectiveness of counselors in almost any family planning clinic, perhaps judgments regarding the effectiveness of the intervention are more realistically made in a context in which counselor variation is assumed.

Further discussion of the one outcome measure that was affected by contingency-planning counseling—unintended pregnancy within six months—is necessary. Of all the outcomes we measured, pregnancy is clearly the most important. Although contingency-planning counseling did not significantly affect the rate of unintended pregnancy among all patients, it did make a difference during the first six months among women who had ever been pregnant. It is disappointing that the difference in the pregnancy rate observed between contingency-planning and control patients at six months disappears by 12 months.

Although postponing a pregnancy for even six months may make a difference in patients' lives, the efficacy of an intervention that has effects that do not last beyond a six-month period must be questioned. As discussed above, it may be that the intervention is not powerful enough to have a longer impact. If this is the case, one possible remedy would be to develop mechanisms for offering another "dose" of the intervention to clinic patients. Perhaps if there were more frequent clinic visits or regular follow-up by telephone, the effects of the counseling would endure longer. Indeed, an evaluation of a similar counseling intervention that was implemented in conjunction with telephone follow-up yielded quite positive results.[4]

In summary, contingency-planning counseling was successfully implemented at the research site, and was favorably received by both patients and clinic staff. However, patients in the two groups did not differ significantly on most of the outcomes considered. The one exception is that for a particular subgroup, the pregnancy rate at six months was significantly lower among contingency-planning counseling patients. It is noteworthy that this subgroup contains women who are known to be at greater risk of experiencing unintended pregnancies.

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# Comment

## The Availability of Educational and Training Materials On Men's Reproductive Health

*By Katherine A. Forrest, Janice M. Swanson and Douglas E. Beckstein*

The 1980s have seen a renewal of interest in the role of males in family planning and reproductive health. Some of the factors that have contributed to this trend include the current epidemics of sexually transmitted diseases (STDs), including AIDS, and unremittingly high levels of unplanned pregnancy. There has also been a growing recognition of men's reproductive health problems, such as prostate cancer, occupational hazards to reproductive health, male infertility and erectile dysfunction of organic etiology.[1]

A pilot study has shown that family planning clinic administrators interested in increasing male involvement in their programs give high priority to the development and dissemination of male-specific educational materials.[2] Most family planning programs have some educational items related to male reproductive health services, the most common being pamphlets, films and posters.[3] Even programs that serve only women generally make such materials available for their female clients to take home to their partners. Survey respondents were most interested in receiving more pamphlets and films, as well as staff education materials.

In response to the perceived need for such items, members of the American Public Health Association (APHA) Task Force on Men in Family Planning and Reproductive Health have sponsored sessions for exchanging educational resources, have published a newsletter listing materials on men's reproductive health and have supported the development of an annotated resource catalog of such materials. In this article, we describe the types of resources that are currently available, identify continuing needs and make recommendations about the kinds of materials that should be developed.

### Currently Available Resources

Educational resources on male reproductive health can be classified on three dimensions—their content, audience and medium. One content area is the specifically medical, consisting of such topics as technical aspects of reversible contraceptives or sterilization; STDs; the anatomy, physiology and development of the male reproductive system; fertility and infertility; sexual dysfunction and its treatment; male reproductive health care and health maintenance, such as self examination of the testicles, the genitals, the male breast and the prostate; and subject matter on medical aspects of the female reproductive system, such as female anatomy and physiology, pregnancy, childbirth, menopause and disorders of the female reproductive system. Another area addressed in the literature on male reproductive health is the developmental and psychosocial, comprising such topics as sexuality and sexual orientation (including normal sexual functioning, sexual dysfunction and aberrant sexual behavior); couple and family issues, such as the sexual impact of aging, disability or surgery, abortion, sexual decisionmaking, parenting and counseling; gender roles and the development of self-identity; and cultural factors (such as race and ethnicity) related to medical, developmental and psychosocial concerns about sexuality. A third set of topics pertains to administration and program planning, including techniques for conducting needs assessments; considerations of clinic environment (such as scheduling or decor); finances; management issues (such as staff training or program evaluation); and material resources needed to implement a program.

The second major dimension is the audience for which a particular item is designed. Besides the clinic client himself or herself, the audience for male reproductive health materials may consist of health care practitioners, other counseling or health professionals, administrators, other agency staff members and community opinion leaders and educators.

As for the media used, materials may range from traditional forms (such as periodicals, brochures and posters) to audiovisual formats or other, more innovative approaches, such as computer-aided instruction. Between these extremes may lie how-to manuals, algorithms, checklists, protocols, lecture outlines and participatory exercises.

The 1987 edition of the *Annotated Guide to Men's Sexual and Reproductive Health Resources*,[4] which lists over 500 items, is to our knowledge the most comprehensive collection of information on men's reproductive health materials. It was compiled from a wide variety of sources, including Popline, the San Francisco AIDS Foundation, the Planned Parenthood Federation of America, ETR Associates and approximately 150 other U.S. producers of various media, as well as through personal solicitation of materials from professionals working in men's reproductive health programs.

We reviewed the 1987 edition to determine the number of items in each of the three categories described above. However, since insufficient information is available to permit categorization of some of the items and other items combine material from several different categories, the listing in Table 1 can be considered an approximation of the spectrum of materials available in the field of male reproductive health.

With regard to the content of the items examined, nearly 50 percent are devoted to psychosocial issues. Many of these ma-

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terials relate to gender roles, fathering and relationships—evidence of the impact of changing social values since the late 1960s. Over 40 percent of the items are medical in nature; the impact of AIDS is evident here, with AIDS-related materials representing 38 percent of the medically oriented items identified. Program management and training, on the other hand, are poorly represented, accounting for only five percent of identified items.

As for the media used, information is available on 526 items. Not unexpectedly, print materials outnumber audiovisuals by about three to one. Miscellaneous items—posters, anatomical models and clinic protocols—constitute only about one-tenth of the materials available. Most materials listed in the *Guide* appear to be targeted toward patients and lay audiences.

## Observations and Commentary

There are far fewer educational and training materials that address men's involvement in family planning and reproductive health care than is the case with women's health care. Producers of educational materials have raced into production with pieces on AIDS, not only because of the severity of the disease but also because the topic sells well in the marketplace. This type of "herd effect" results in the production of many redundant items, while other important subject areas are neglected. For example, considerable redundancy is evident in some subject areas (e.g., puberty and fathering), while materials on other topics (e.g., the impact of the partner's health problems or of medications on sexual performance) are largely nonexistent.

It appears that there are many more educational materials intended for consumers than for professionals and care providers, which is consistent with the relative neglect of men's reproductive health topics in professional training programs. The provider-oriented materials that are available are for the most part discipline-specific, with items on medical topics targeted at physicians and nurses and those on psychosocial topics and gender roles aimed primarily at therapists and counselors. Such specificity is likely to lessen the chance that a physician will learn how a hysterectomy or a mastectomy is likely to affect a female patient's spouse, for example, or that a psychotherapist will find out how to address the family planning counseling needs of a disturbed adolescent. In addition, the general lack of materials intended specifically for audiences other than professionals or the general public, such as program administrators or community leaders, may lead to a lack of knowledge among administrators about men's reproductive health programs (and therefore an unwillingness to start such programs) or a lack of understanding among community leaders about the health education needs of teenage boys.

The quality of available educational materials varies, and reading levels are generally rather high, at least for materials targeted to clinic clients or the general public (ninth grade or more).[5] The materials also often are gender-specific (i.e., they are addressed to a man or to a woman, but not equally to both), and little attention is paid to ethnic or racial issues (other than the occasional darkening of faces in illustrations). Cultural differences in potential audiences are not addressed, nor are racial differences. In addition, some materials are specifically regional or local in focus or content, which limits their general utility.

Much of the material is old and has not been updated. Outdated content, moreover, invalidates some of the items (such as those on STDs and vasectomy reversal). Films and videos suffer particularly in this way, especially those intended for a teenage audience, because teenagers are very sensitive to incongruities in dress and speech. In addition, most of the films are not available on videotape.

Most of the available male reproductive health materials are off-the-shelf, are designed for a single purpose and require little staff intervention in order to be used. Although this emphasis may be appropriate, it also means that flexible, adaptable materials (such as slide sets for professional education) are not readily available.

One problem that interferes with the implementation of men's reproductive health programs and with the involvement of professionals, administrators and community leaders in such programs is the nature of the training programs and educational efforts aimed at these audiences. Most commonly, these consist of one-time conferences or workshops, with little systematic repetition (especially in the area of professional continuing education).

Poor communication about the resources that do exist undoubtedly poses a further barrier. The redundancy of a great number of materials is at least partly a result of the failure of professionals to publish or disseminate items that have been developed. Such a failure to communicate also affects program information, training materials and research findings, which often fail to find a deserved wider audience.

**Table 1. Number of available materials on men's reproductive health topics, by dimension and type**

| Dimension and type | Number |
|---|---|
| CONTENT AREA | |
| **Medical** | **202** |
| AIDS | 76 |
| Contraception | 40 |
| Condoms | 25 |
| Vasectomy | 20 |
| General male reproductive health | 29 |
| STDs | 26 |
| Male anatomy (in whole or in part) | 14 |
| Testicular self-examination | 6 |
| Circumcision | 3 |
| Sexual dysfunction | 3 |
| Puberty | 15 |
| Infertility | 10 |
| **Psychosocial** | **263** |
| Gender roles | 88 |
| Fathering | 80 |
| Gay issues | 21 |
| Relationships | 17 |
| Intimacy | 7 |
| Rape | 8 |
| Abortion | 5 |
| Battering | 4 |
| **Program management & planning** | **24** |
| MEDIA | |
| **Print** | **338** |
| Pamphlets | 165 |
| Books | 123 |
| Periodicals | 50 |
| **Audiovisuals** | **131** |
| Films & videos | 103 |
| Records | 28 |
| **Miscellaneous** | **57** |
| Posters | 37 |
| Anatomical models | 14 |
| Clinic protocols | 6 |

Note: Numbers in this table do not necessarily add to the totals shown, as some items were unclassifiable or fell under multiple categories.

Source: See reference 4.

## Recommendations

Our review suggests several conclusions. One is that there is a great need for improved communication about training and resources in the area of men's reproductive health. This need is being addressed at least in part by the efforts of the APHA Task Force described earlier, but such activities are not enough; what is required to make male-involvement efforts more effective is a clearinghouse or centralized information center. Financial support for the dissemination of information about men's reproductive health materials is also important, since the nonprofit organizations that develop such items often lack the resources and skills to market these products effectively. When policy decisions are made regarding the funding of materials development, priority should be given to the development of training programs and materials that are of greatest importance for meeting public health objectives and accomplishing specified goals (such as training people to work with men in a clinical setting).

Administrators, health professionals and nonprofessional clinic personnel are the audiences that are in particular need of training with regard to men's reproductive health issues if men's involvement in reproductive health and family planning services is to be improved. Moreover, we need materials that cross disciplinary lines in order to improve the effectiveness of health professionals: Information on couple communication and gender differences in health behavior is important for nurses and physicians, and medical materials are important for nonmedical personnel such as counselors and administrators.

The materials that are available should probably undergo other types of change as well. First, greater sensitivity should be shown to the needs of low-literacy, nonwhite and non–English-speaking populations, especially in items directed at consumers. Further, there is a need for both sex-neutral and partner-cognizant materials in many areas, such as those dealing with the impact of reproductive surgery or rape on a sexual partner. Finally, old materials should be updated if they are otherwise considered to be of high quality, and they should be translated into more contemporary media and formats.

If health professionals are to be equipped to diagnose, treat and educate their patients effectively, medical and nursing curricula must cover men's reproductive health issues in greater detail than is generally found in most current programs. Public health and teacher training programs should also incorporate men's health topics. In addition, those who are planning programs that have the potential to improve male involvement and male health must keep in mind the need for relevant materials and the potential these can have for helping both patients and staff members. Planners should not only assess what is available but also select whatever *existing* materials are appropriate to the program, in order to avoid spending time "reinventing the wheel."

Finally, programs and individuals seeking to improve the status of men's reproductive health and to reduce the prevalence of unintended pregnancy, STDs and AIDS should emphasize the need to contact and inform those in society (e.g., media professionals, educators and youth workers) who can have a substantial impact on social values. One can expect that male involvement in contraception and the prevention of STDs would be enhanced if people are presented with positive role models. Increasing the public's awareness of men's reproductive health problems and vulnerability may make it easier for individuals to seek appropriate care for themselves. Finally, better-informed community leaders might catalyze important institutional changes, such as decreasing men's and women's exposure to reproductive hazards in the workplace, increasing the availability of cancer screening for men and providing adequate public and private funding of reproductive health services for both sexes.

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# Comment

## The Evaluation Component in Adolescent Pregnancy Care Projects: Is It Adequate?

*By Gerald J. Stahler, Joseph DuCette and Dennis McBride*

### Introduction

In 1981, Congress enacted the Adolescent Family Life Act (AFLA, Title XX of the Public Health Service Act) to fund innovative demonstration programs addressing the problems of teenage pregnancy and childbearing. The legislation called for two categories of projects: those to prevent adolescent pregnancy and those to care for teenagers who were already pregnant or already parents. The AFLA was to be implemented by the Office of Adolescent Pregnancy Programs (OAPP), in the Department of Health and Human Services.

The AFLA care projects—more than 50 of which have been funded across the United States, Puerto Rico and Guam—have served about 11,000 pregnant teenagers and young parents annually; about 70 percent of these clients have been enrolled during pregnancy, and 30 percent have entered as mothers. These projects have also provided services to some 2,500 male partners, 5,000 infants and 6,000 extended family members per year.[1] In addition, the AFLA prevention projects, which seek to promote abstinence among adolescents, have served approximately 50,000 teenagers and preteenagers each year, most of them not yet sexually active.

A crucial question to be asked about demonstration projects, of course, is whether they produce the effects intended. This question can only be answered if an appropriate evaluation of the program has been carried out. To promote the collection of credible evidence on the effectiveness of different interventions, the AFLA requires each project it funds to spend between one and five percent of its grant on evaluation. The project must select an evaluator who is independent of the project and is affiliated with a local college or university.[2]

Because Congress is currently considering replacement legislation for the AFLA that would change many of the program's original features and establish it as an ongoing service program rather than as a demonstration program,* it is particularly important to review what kind of track record the existing AFLA projects have compiled in the area of evaluation and what implications that record has for the new legislation under consideration.

### The Study

This article is based on a review of the evaluation activities reported by 45 of the AFLA projects designed to care for pregnant teenagers and teenage parents. The intent of the AFLA with respect to care projects was to promote workable models of comprehensive programs that reduce the negative consequences of adolescent pregnancy. Toward this end, Title XX mandates 10 comprehensive core services that each project must provide either directly or through referral. The services are pregnancy testing and maternity counseling; adoption counseling and referral services; primary and preventive health care services, including prenatal and postnatal care; nutrition information and counseling; referral for screening and treatment of venereal disease; referral to appropriate pediatric care services; education in sexuality and family life; referral to appropriate educational and vocational services; family planning counseling and referral; and referral to mental health services and other appropriate health services.

In addition to the core services, certain supplemental services are eligible for funding, including child care, consumer education and homemaking, counseling for extended family members, transportation, and outreach services to families to discourage sexual relations among unemancipated minors. Projects are encouraged to promote coordination, integration and linkages between existing programs to enhance the delivery of both the core and supplemental services to pregnant adolescents and adolescent parents.

Because the AFLA mandated no single program type—only that the program deliver particular services and meet certain eligibility and administrative requirements—the 45 projects (most of which were in their third year of funding) varied widely in size, type of setting, and emphasis. Many of the projects provided either direct medical or direct educational support to the teenager during her pregnancy. Many also offered medical and other services to the teenager and her baby for some period after delivery. Some programs

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*In the Senate, Senator Edward Kennedy (D.-Massachusetts) has introduced the Adolescent Pregnancy Prevention, Care and Research Grants (S. 120); and in the House, Representatives Mickey Leland (D.-Texas), Nancy Johnson (R.-Connecticut) and Henry Waxman (D.-California) have introduced the Adolescent Pregnancy and Parenthood Act of 1989 (H.R. 1117). Both bills would give the program permanent status, and both would eliminate some controversial features of the existing program (the requirement of parental consent for teenagers to participate; a ban on giving pregnant teenagers any information on abortion; encouragement of adoption; and mandated involvement of religious organizations). Both bills also include rigorous accountability and evaluation provisions.

emphasized adoption services, some offered services to teenage fathers, and some performed psychological and vocational counseling. Overall, they were engaged in providing a large and diverse collection of social services.

Our review of these projects, as requested by the OAPP, sought to assess the adequacy of the evaluations they had done up to that time, identify methodological problems and target areas for improvement. The OAPP then wanted to use this information in designing workshops and in developing other measures to assist grantees in improving their evaluations. Our source of information on the projects' activities was the applications for continuation grants they submitted to the OAPP in June and July 1986. These documents typically contain a survey of project activities over the year just completed, a budget for the upcoming year, an outline of activities planned for the upcoming year, a brief summary of previously described evaluation plans and some discussion of evaluation findings, if the evaluation has progressed to the point where discussion of findings is possible. The reason we used these applications is that they represented the most current information available from the projects at the time we initiated our review. Although the information provided in progress (end-of-year) or final reports is ordinarily more extensive than that in continuation grant applications, we believe that the latter contained sufficient information with which to make our assessment.

Our purpose in reviewing the continuation grant applications was to obtain as many data as possible about the quality of the projects' evaluation designs and the ability of the designs to answer important questions. We also were attempting to derive a sense of how the projects were working, the type and range of services they were providing and the problems they were encountering in providing these services. It was not, however, our purpose to evaluate the quality of the programs or to ascertain if they were meeting their goals. Rather, we wanted to know if the information that was being collected by the programs was of sufficient quality and quantity that informed decisions about program continuance could be made.

Accordingly, we separated the evaluation designs described in the continuation grant applications into the two types usually discussed in the literature—process and outcome evaluations.[3] The former focuses on the extent to which a program details, or is capable of detailing, which services are being delivered, in what quantity and to whom. Process evaluation makes it possible to determine whether a program is providing the services it has contracted to deliver.

Outcome evaluations focus on whether the program is collecting and analyzing, or has adequate plans to collect and analyze, data on program outcomes. In examining this type of evaluation with regard to the AFLA projects, we were aided by the extensive literature that exists on program evaluation and applied research methodology, and particularly on the necessary conditions that must be met to affirm the value of a program. For example, it is widely accepted that the value of a program can best be ascertained if outcome data from the clients in the program are compared with data from some other group that did not participate in the program. Since there are a variety of ways of doing this—by using a true control group to which clients are randomly assigned; by using demographically similar groups without random assignment; or by using synthetic data bases—we wanted to see what approach the AFLA programs were taking. Again, we were not interested in whether the programs were successfully meeting their goals, but whether their evaluation components would be able to provide meaningful answers.

In the sections that follow, we present the broad results of our review,[*] discuss the steps that the OAPP has taken to improve the quality of project evaluations and make recommendations for the future. Some of our recommendations, we should note, grow out of our own experience as evaluators for two earlier projects funded by the OAPP.

## Results

We found a number of deficiencies in the projects' evaluation designs, although the documentation for the process evaluations was better than that for the outcome evaluations. The deficiencies occurred in the following areas:

- *Specification of program objectives.* We often found it difficult to ascertain exactly what the program was attempting to accomplish or what its major goals were. Many of these goals could be inferred (for example, a program that provided postdelivery care to the teenager and her baby was clearly attempting to improve the health of both), yet too often the precise goals were left unstated. When this is the case, it is difficult to assess whether the program is in fact achieving its objectives. In addition, it is important that the objectives be formulated in a manner that can be evaluated. For example, "wanting to improve the health and well-being of pregnant teenagers" is an objective that is more difficult to evaluate than "decreasing the incidence of low-birth-weight infants."
- *Establishment of comparison or control groups.* Many programs did not have a comparison or control group, were unaware that such a group (or groups) was necessary, or, in a few cases, did not discuss this issue in their continuation applications. The most common evaluation design was a one-group, pretest-posttest design with no long-term follow-up. That is, the pregnant teenagers were the only group tested and they typically were given a battery of assessment tests when they entered the program and a similar battery after delivery and at follow-up. Usually, data collection ended at delivery or shortly thereafter. This type of design is inadequate for evaluating the relative effectiveness of a program.

Problems that prevented the use of control groups included the added cost of incorporating a control group in the design, the small size of the appropriate population in many of the areas served, difficulty in randomizing, difficulty in collecting confidential data about a comparison population not served by the same agency, and an unwillingness of project staff to assign some pregnant teenagers to control groups that would receive no or fewer services, solely for the purpose of evaluation.

- *Acknowledgment of design limitations.* All too often, the proposals did not explicitly state what the evaluation design's weaknesses were or what might be done to overcome those weaknesses. For example, some programs used a nonequivalent control group without specifying what the possible effect of this design would be on the study's validity. While we assume that the evaluators were aware of design deficiencies and simply did not discuss them in the continuation application, we believe that it is important to explicitly acknowledge and discuss such flaws so as to correctly interpret program results.

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[*] For detailed analyses of both the methodological adequacy of the evaluations and the numerical results produced by the evaluations, see: J. DuCette, G. Stahler and D. McBride, "Assessing the Quality of Evaluations and Adolescent Pregnancy Care Programs," in *Evaluation and the Health Professions*, 1989 (in press); and G. Stahler, J. DuCette and D. McBride, "Review of Evaluations of OAPP Demonstration Service Programs," paper presented at the annual meeting of the American Educational Research Association, New Orleans, Apr. 8, 1988.

- *Data collection procedures.* Many of the programs designed their own data collection instruments, and often neither reported any systematic procedures for establishing the instruments' reliability or validity nor indicated how and under what conditions the instruments were administered to the clients.
- *Linkage of evaluation to program objectives.* Often, the evaluation design was essentially unrelated, or was at most minimally related, to the program's goals. One reason for this, at least in some cases, might be that the evaluator who was brought in to assess the program had too little input from program staff. While these designs were often adequate to answer certain questions, in too many cases the questions were irrelevant to the programs' goals.

For example, the objectives specified for one program included soliciting community support and involvement, maintaining school enrollment rates among teenage participants, reducing the rate of subsequent pregnancies, enrolling a high percentage of teenage fathers in the program, achieving normal child development quotients for the infants born to teenage clients and reducing low birth weight. The evaluation, however, primarily measured a number of "intermediate" psychological variables, such as locus of control, self-esteem, knowledge about pregnancy and parenting, work values and purpose in life. Only one scale was directly related to one of the program's objectives. While these psychological data may be important, they did not directly relate to the objectives of the program. The evaluation, in a sense, was split off from the goals of the program.

- *Complete evaluation of the program.* It was fairly common in the outcome evaluations for the evaluator to provide an extensive and in-depth analysis of one aspect of the program but to ignore most other aspects. One project, for example, had a strong outcome evaluation that used a randomized control-group design. Unfortunately, this design was applied to only one of the program's 10 components—a peer counselor intervention. Thus, the bulk of the program was not really evaluated. From our review of the continuation applications, we were unable to determine if limited funds were a factor that prevented full-scale evaluations from being conducted, but it seems reasonable to assume that some evaluators, faced with insufficient funds and the choice of surveying the entire project superficially or one aspect of it in depth, chose the latter.
- *Attrition rate issues.* While some of the projects attempted to follow their clients for a period of time after delivery, those that did often found it extremely difficult; fewer than 50 percent of the clients could be followed for more than a year. Moreover, many programs did not attempt to follow their clients, or they mentioned that clients were being followed but did not provide any data on the attrition rate.

### Corrective Steps Taken

In the initial years of the Adolescent Family Life program, the OAPP placed minimal emphasis on evaluation and provided only a limited amount of technical assistance to grantees. In 1985, the office had a change of leadership and began to take steps to improve the quality of project evaluations. This was in response to the OAPP knowledge that the evaluations were weaker than desired. Some of the changes instituted have begun to remedy a number of the deficiencies described above.

For example, in response to the problems of inadequate specification of program objectives and inadequate linkages between evaluations and objectives, the OAPP now emphasizes coordination between project directors and evaluators. Previously, many project directors viewed the independent evaluators as legislatively required nuisances to whom they had to provide a small share of their grant awards—but nothing more. The evaluators, in turn, under no pressure from the project directors to do anything project-related, simply used the project as a captive population on which to initiate or continue research in whatever area interested them. Since the change in leadership, the OAPP has held joint director-evaluator training conferences and has emphasized cross-training of directors and evaluators in each other's roles and objectives. During the joint conferences, the evaluators seek to generate the strongest evaluation design possible for a given site, and then meet with the project directors to resolve any disagreements that might arise from the design. This approach encourages networking among projects, increases comparability of information across sites and enhances understanding and agreement between project directors and evaluators as to the objectives of the evaluation.* The conferences also emphasize the importance of evaluation in efforts to design and improve programs, to secure funds for the programs, and to formulate and implement policies that enhance the quality of programs. In addition, the OAPP has provided project staff members with an "Adolescent Family Life Self-Evaluation Manual" that covers the setting of measurable goals, among other topics.

The failure to use appropriate comparison or control groups remains a problem for teenage pregnancy programs, but the OAPP now emphasizes to project evaluators the availability of, and techniques for using, demographically matched comparison groups and synthetic data-based comparison groups. In fact, as of June 1988, more than 70 percent of the projects were using some type of comparison group in their evaluations. (The agency stresses that although these represent an improvement over no comparison groups at all, an even stronger design—i.e., random assignment—should be used whenever possible.) Files of demographically well-described populations and synthetic populations have been developed with the OAPP sponsorship and are included in the Data Archive on Adolescent Pregnancy and Pregnancy Prevention, which is supported by the OAPP and operated by Sociometrics Corporation (Palo Alto, California). The archive is available to evaluators of AFLA projects, as well as to others doing research in the field of teenage pregnancy.

To encourage evaluators to make explicit any flaws in their evaluation designs, the OAPP now provides evaluators with reporting guidelines that ask them to state the limitations of the designs. In addition, the OAPP provides technical assistance to evaluators.

To address deficiencies in data collection, the OAPP has established a minimum, or standardized, data set that records antecedent, program and outcome variables relevant to the central objectives of most programs for pregnant adolescents and adolescent parents (for example, health, education and economic indicators). The minimum data set can be used for both process and outcome evaluations since its questions have been designed to match those for similar items in national data collections, such as the National Survey of Family Growth and the National Longitudinal Survey of Youth. By using this minimum data set, programs can compare data on their clients with comparison standards derived from the national data.[4] Selection of variables not included in the minimum data set is left to the individual evaluators; however, the OAPP provides help with the selection through technical assistance and circulation of *The Adolescent Life Demonstration*

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*For specifics of the strategies used in the joint conferences, see: reference 2.

*Projects: Program and Evaluation Summaries,* an annual compendium summarizing the evaluation approaches used by all funded projects.

## Recommendations

Although the OAPP has taken great strides in the past several years toward upgrading project evaluations, we believe that more needs to be done to improve the accountability of the AFLA programs and our knowledge of the effectiveness of those programs.

In our view, while the AFLA legislation was commendable in requiring evaluations, some of the restrictions in the law preclude credible program assessment. For example, the AFLA limits funding for program evaluations to a maximum of five percent of the grant (with a one percent minimum) and requires that evaluations be subcontracted to universities within the same state. Five percent is simply an unrealistic ceiling if the AFLA program is to be seriously evaluated. Because of the complexity and intractability of the problems associated with teenage childbearing, the OAPP will inevitably be asked what solutions its evaluated demonstrations have found. The AFLA may well have developed significant new approaches to those problems, but given the penuriousness of evaluation funding, it is questionable whether most of these approaches can be documented and examined to the extent that we can say with any certainty how effective they are. For example, it was our impression from reading the continuation grant proposals that the programs were making sincere efforts to remediate the problems they were designed to address. Moreover, it is evident that there was a wide variety of creative and innovative service delivery approaches. Despite these strengths, we were unable in the final analysis to obtain an objective, data-based evaluation of most programs' effectiveness. If the purpose of a demonstration program is to "demonstrate" innovative approaches to service provision, then a greater investment in resources must be made to assess whether these innovative approaches work or not.

To its credit, the OAPP in a few cases has cautiously waived the five percent ceiling to allow for better evaluations. Currently, the agency invites applicants to submit proposals where evaluation amounts can constitute up to 30 percent of grant awards. A limited number of these evaluation-intensive projects will be funded under the waiver authority in the law, and they will be closely monitored by the OAPP. This approach should help increase the number of proposals that place more emphasis on, and give more thought to, evaluation.

It might also be preferable to separate the evaluation subcontract from the demonstration project grantee, so that the evaluation budget would not be under the control of the project director, whose main concern is management and administration. All too often, project directors regard budgets for the evaluation component as an unnecessary expense to be trimmed below five percent as funding for program services decreases.

Another improvement would be to remove the restriction that only universities may qualify as providers of evaluators. University overhead considerably reduces the amount of funds available for actual evaluations. All too often, the result is shoestring evaluations of low quality, with evaluators and sometimes program directors using their creative talents to "submerge" evaluation costs under other line items. Although it is very important for evaluators and project directors to work closely together and submit a joint proposal for funding, the actual flow of funds for the evaluation could go directly from the OAPP to the evaluators, instead of being funneled through the demonstration program. Continued funding for projects could be made contingent on whether credible evaluations are being conducted.

Attrition is a notorious problem for evaluations of teenage pregnancy programs in general. The OAPP, along with many researchers in this field, recommend the collection of follow-up data at six, 12 and 24 months postpartum. However, with evaluation funds limited—for AFLA grantees, to 1–5 percent of the grant—most programs cannot afford to obtain follow-up data on those clients who have discontinued services. This problem is further magnified when clients do not have a continuing relationship with the provider institution (as is the case with a hospital-based or freestanding program as opposed to a school-based one). To enhance the assessment of program effectiveness, there must be more emphasis on and more resources allocated to the follow-up of program clients. Additional resources must be allocated to enable longer term follow-up and to bolster response rates for follow-up. Doing so would necessitate providing enough funds for a sufficient number of staff to track clients, as well as offering financial incentives for clients to cooperate. These are expensive strategies, and they cannot be implemented adequately within the confines of the five percent limit.

Finally, the OAPP should continue to exercise leadership in the dissemination of promising program models. Its annual compendium summarizing the AFLA projects was an excellent and much-needed beginning. The next step should be a more selective and evaluative approach that disseminates to both AFLA and nonfederally funded programs those promising intervention strategies that should be replicated. Ultimately, the OAPP should help replicate promising approaches and strategies once they are identified by credible evaluations.

To bring about these needed improvements and to continue making progress in the development of innovative programs, any legislation enacted to replace the AFLA program must ensure that more adequate resources are allocated to produce credible evaluations of programs designed to alleviate the negative consequences of teenage childbearing.

The recently introduced replacement bills sponsored by Senator Kennedy (S. 120) and Representatives Leland, Johnson and Waxman (H.R. 1117) represent substantial improvements over the AFLA regarding the provisions pertaining to evaluation. These bills are considering multisite evaluations, as well as an increased funding level to 10 percent for individual project evaluations. This represents twice the percentage for evaluations contained under the provisions of the AFLA. Also, the sponsors of the bills are considering making additional funds available for programs that implement more rigorous evaluations. Should these measures be passed, evaluators of adolescent pregnancy care programs will have the resources to carry out more credible and rigorous evaluations.

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# Special Report

## Providing Prenatal Care Services at Family Planning Clinics: Problems and Opportunities

*By Patricia Donovan*

The inability of many low-income and marginal-income women to obtain prenatal care has become a matter of national concern. Spurred by the high infant mortality rates among such women, Congress has broadened eligibility for Medicaid coverage over the last several years: As of July 1988, it permitted states to extend Medicaid coverage to pregnant women with incomes of up to 185 percent of the poverty level; it has since required states to cover pregnant women with incomes of up to 75 percent of poverty by July 1989 and those with incomes of up to 100 percent by July 1990.[1] As another response to the problem of access, the Institute of Medicine has called for "the expansion of the variety of settings in which prenatal care is offered," noting that the traditional providers of prenatal care for poor women—mainly maternal and child health clinics and community and migrant health centers—are unable to meet the demand for these services.[2]

With their commitment to providing comprehensive reproductive health care, family planning clinics appear to be a logical setting in which to offer prenatal services. Indeed, since the late 1970s, a small but growing number of family planning clinics have begun to provide such services, specifically because of the lack of affordable, accessible prenatal care in their communities. Currently, at least 21 nonprofit, freestanding family planning agencies, all but three of them Planned Parenthood affiliates, operate prenatal programs at 35 sites across the United States.* (More than half of the program sites are in California and New York.) The programs range in size from about 30 patients per year to some 350–400 women annually.

The overview that follows is based on interviews conducted between July 1988 and March 1989 with administrators and other personnel of each of the family planning clinics that offer prenatal care.

### Advantages of the Clinic Setting

Clinic administrators believe that their prenatal programs are a logical extension of their agencies' mission to provide comprehensive reproductive health care to their patients. "I think every family planning clinic ought to offer prenatal care," says Shirley Mirow, executive director of Planned Parenthood of South Palm Beach and Broward Counties, in Boca Raton, Florida.[3] "Clients get pregnant and come back to you; they don't want their care fragmented." Explaining the reasoning of Planned Parenthood of Northern New England, regional director Nancy Mosher notes, "We felt it might ensure earlier prenatal care and better contraceptive care if women stayed in our system [for prenatal care]."[4] Indeed, some family planning providers have found that offering prenatal care is an effective way to reach certain groups (Hispanic women, for example) who may be reluctant to come to the clinic for contraceptive services.

Several administrators note that a prenatal program can enhance the public image of a clinic and, if the clinic also offers abortion services, help deflate charges leveled by right-to-life groups that the clinic encourages pregnant women to have abortions. "When you have prenatal services, the community sees you differently, more sympathetically," according to Mirow. Mosher, whose clinic in Barre, Vermont, initiated abortion services in 1987, agrees, noting that "it is definitely helpful to be able to say we offer women the options they need."

Generally, the clinics' family planning workers provide the prenatal care services. (Some clinics have hired additional personnel, most often a coordinator for the prenatal program—usually a nurse practitioner—and a social worker.) The administrators report that their staff members have been enthusiastic about expanding into prenatal care. The nurse practitioners were "clamoring to do the prenatal program," says Rita Sarich, regional manager for Planned Parenthood of San Diego and Riverside Counties, California, which offers prenatal services at two of its 10 clinic sites.[5] However, Swanee Marcus, executive director of Columbia-Montour Family Planning (in Bloomsburg, Pennsylvania) and founder of that agency's prenatal program, stresses that the delivery of prenatal care in a family planning setting requires "a very versatile staff who can [do] options counseling one minute and talk about baby formula and getting enough nutrients in the [infant's] diet the next."[6] Additionally, according to Susan Momeyer, executive director of Planned Parenthood Association of Butler County, Ohio, staff members must "maintain concern for the sensitivity of [the clinic's] family planning patients, most of whom want to prevent pregnancy. It is easy for the staff to pay more attention to prenatal patients [because] there is a more concrete reward [in] helping a patient have a healthy baby. It is really important not to let [prenatal services] take over the tone of the whole clinic."[7]

### Demand for Prenatal Services

Almost without exception, the administrators say that the demand for prenatal care at their clinics has been far greater than they anticipated. During the first full year it offered prenatal services, for example, the Planned Parenthood clinic in Elmira, New York, expected to provide care to 12 women, but actually served 121.[8] Similarly, reports Shirley Mirow, Planned Parenthood of South Palm Beach and Broward

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*This figure does not include family planning clinics located in hospitals or other medical settings.

Counties had anticipated providing prenatal care to 60 women in the first year of its program but served twice that number, even though it charges a set fee of $1,900 for prenatal care and delivery and accepts into the program only uninsured women who are not Medicaid-eligible. "People are clamoring to get in," according to Susan Crum, a nurse practitioner at Columbia-Montour Family Planning.[9] Rita Sarich reports that Planned Parenthood of San Diego and Riverside has had the same experience: "We could run prenatal clinics every day and still not see everyone."

The demand for prenatal care at their clinics, the administrators say, stems in part from the growing tendency of physicians to close their obstetrics practices because of high malpractice insurance rates and to refuse to accept Medicaid patients because of low reimbursement rates. In the last two years, for example, three of the six obstetricians practicing in Washington County, Vermont, have either closed their practices or stopped taking Medicaid patients. As a result, the proportion of Medicaid patients among women enrolled at the prenatal clinic in Barre, Vermont, operated by Planned Parenthood of Northern New England increased from 30 percent in 1987 to 55 percent in 1988. Since last summer, the agency has been forced to turn away several women each month—women who, according to Nancy Mosher, have already been turned down by other providers. These women ultimately are forced to go to another county to obtain prenatal care, Mosher says.

In Los Angeles, the county health department operates a large prenatal care program but faces a 2–3 month backlog of patients, according to Stephanie Alexander, the director of clinical programs at Planned Parenthood–World Population of Los Angeles.[10] Her agency recently extended its prenatal program from two sites to five because of the county's inability to meet the demand for prenatal services.

## Operation of the Programs

Prenatal services are usually provided by a nurse practitioner (often one who specializes in obstetrics) or, less commonly, by a nurse-midwife or physician's assistant.* In a few cases, a physician provides most or all of the prenatal care. All clinics have made arrangements with a private obstetrician or with staff physicians at a local hospital for them to see each prenatal care patient at least once—and usually twice—during her pregnancy (in the first trimester, to determine her risk status, and again in the third trimester), consult with the clinician on an ongoing basis and handle emergencies.

With two exceptions,† the family planning clinics studied make prenatal care available only to women aged 15–35 who have low-risk pregnancies (a restriction based for the most part on Planned Parenthood Federation rules). The clinics generally screen women on their first or second visit to determine their risk status. High-risk women (those who are under age 15 or older than 35, those who have had a prior cesarean delivery, and those with one of a variety of medical conditions with the potential for complicating pregnancy or delivery) are then referred to a private physician or the local hospital clinic, each of which may be a considerable distance from home. When caseloads permit, about half of the clinics make prenatal services available to all women who meet their age and risk criteria; the others generally accept only women who have no public or private insurance or who meet the income and residency requirements imposed by the local hospital that provides delivery services for their patients. Several administrators report that they restrict their services to uninsured and Medicaid-eligible women in order to obtain cooperation from private physicians who are concerned that the clinic might take paying patients away from them. Planned Parenthood of New York City, on the other hand, limits its prenatal program to teenagers.

Many of the clinics offer family planning services and prenatal care on different days; the prenatal sessions generally are held one or two days a week. To accommodate prenatal care patients without cutting back their family planning program, many providers have extended the hours of family planning sessions, often into the evenings and on Saturdays, or have shifted family planning patients to another clinic site to free up staff and space where prenatal care is provided. Some clinics have never operated their family planning program five days a week, so they have been able to provide prenatal care on the days when family planning services are not offered.

The prenatal services offered by these providers follow the guidelines of the American College of Obstetricians and Gynecologists, which recommends 13 prenatal visits: one a month for the first 28 weeks of pregnancy, one every 2–3 weeks from that point up to 36 weeks of gestation and one a week during the last month.[11] Clinic administrators report, however, that many women do not make their initial visit for prenatal care until midway through the second trimester.

All the clinics perform pelvic examinations and routine lab tests, which usually include urinalysis, urine culture, screening for sexually transmitted diseases, determination of Rh type, determination of rubella antibody titer, hemoglobin measurement and screening for alpha-fetal protein. Many clinics have their patients undergo sonograms to confirm gestational age.

In the counseling they provide, the clinics place particular emphasis on education about the importance of a good diet and exercise and about the risks of smoking and drug use; they employ a combination of videos and printed materials to get their message across. The clinics also offer family counseling and sessions on natural childbirth and parenting. Most counseling sessions are conducted on an individual basis because the clinics have found that patients will not attend group sessions.

None of the family planning clinics that run prenatal programs offer delivery services directly, chiefly because their malpractice insurance does not cover delivery.‡ Clinic administrators widely agree that an essential element in the provision of good prenatal care is continuity between the services rendered at the clinic and delivery at a hospital. "We did not want to do prenatal care and then dump the women on the emergency room or a doctor they didn't know," says Mark Salo, executive director of San Diego Planned Parenthood.[12] To facilitate continuity of care, many clinics send a copy of each patient's records to the hospital where she will deliver, so the attending physician will know the woman's medical history even if he or she is not personally familiar with the woman.

Assuring continuity of care sometimes represents a major hurdle, however. A number of clinics have had difficulty in finding doctors willing to deliver their patients. Indeed, Planned Parenthood of South Central Indiana, in Bloomington, recently was forced to discontinue its prenatal program when the only physician willing to deliver the clinic's patients at the state's rate of $200 per delivery withdrew his services because of the demands of his private practice.[13] The clinics use a number of different arrangements to try to deal with this problem. Some contract with a nurse-midwife or physician to examine patients at the clinic a certain number of days a month and then to provide delivery services at a nearby hospital; in such cases, the clinic's insurance covers the prenatal care provided on its premises, but the individual practitioner is responsible for malpractice insurance to cover the delivery. For example, Family Planning Services of Clarion County and Family Planning Services of Indiana County (both operated by the Family Planning Council of Western Pennsylvania) contract with an obstetrician to come to the clinic one day a week and to provide delivery services.[14] Planned Parenthood of Northern New Jersey has a similar arrangement with a nurse-midwife, and contracts with a physician to provide emergency backup.[15]

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*Several administrators note that compared with the nurse practitioners on their family planning staffs, those hired to provide prenatal services have commanded higher salaries because of their specialized training (particularly in obstetrics) and the greater responsibilities inherent in prenatal care.

†The exceptions are Family Planning Services of Clarion County and Family Planning Services of Indiana County (both in western Pennsylvania), where physicians provide most of the prenatal care and accept into the program women who are identified as high-risk.

‡Planned Parenthood affiliates are prohibited from providing delivery services because their national organization's umbrella insurance coverage does not include malpractice insurance for childbirth.

To provide prenatal care at its clinic, on the other hand, Planned Parenthood of South Palm Beach and Broward Counties, Florida, has an agreement with the medical consulting firm that provides obstetric and gynecologic care at the local hospital where the Planned Parenthood prenatal patients deliver. The agency pays the firm $20,000 a year for this service.

Some clinics have cooperative arrangements with the local public hospital whereby the latter provides delivery services and sends staff physicians to the prenatal clinic a certain number of days a week or month to screen women for risk factors and examine patients during their last month of pregnancy. (In some instances, clinics have found hospitals reluctant to enter into such an arrangement.) In a variation on this type of arrangement, prenatal care patients at facilities operated by Planned Parenthood of East Central Ohio and of Schenectady and Affiliated Counties, New York, transfer for third-trimester care to the prenatal clinic in the hospital where they will deliver; patients at the Planned Parenthood affiliate in Champaign, Illinois, enter the care of their delivering physician for the last six weeks of pregnancy.[16]

In a few cases, the cooperating hospital imposes income and residency requirements that affect women's eligibility for prenatal care at the clinic. For example, the only women eligible to receive prenatal care at Planned Parenthood of Houston and Southeast Texas are those whose household income is low enough to qualify them for free services from the Harris County Hospital District in Houston, which operates the city's only publicly funded obstetric hospital. "Without that agreement, we couldn't do [prenatal care]," observes the agency's executive director Peter Durkin.[17]

Despite the clinics' efforts, some women end up delivering in a hospital emergency room. The Planned Parenthood Association of Cincinnati, for example, has an agreement with a local hospital to provide delivery services for patients in its prenatal program, which serves only uninsured women not covered by Medicaid; however, the hospital requires the women to pay a portion of the $1,200 delivery charge before the birth. If the women are not able to come up with the payment—and a substantial number cannot, according to Planned Parenthood of Cincinnati deputy director Pat Sidebottom—they wind up going to an emergency room. "We have not been able to find grant money for hospital or delivery charges," Sidebottom laments. "This is frustrating since we often have women with no funds [to pay for the delivery]."[18]

After delivery, the clinics routinely provide postpartum examinations and contraceptive services. Some clinics try to stay in touch with their prenatal care patients after delivery, to help with difficulties in breastfeeding, child care and family relationships. Planned Parenthood of Butler County, Ohio, for example, has a full-time social worker visit each patient at home after delivery to reinforce the importance of infant stimulation, family planning and child spacing and to screen for possible child neglect and abuse. (This service is funded in part by the state's Child Abuse Prevention Program, which provides social services for parents considered at high risk of committing child abuse.)

## Financing Prenatal Services

Aside from arranging for delivery services for their patients, obtaining the necessary funds is the biggest problem faced by clinics that operate a prenatal program. "It is very costly to provide prenatal care in a family planning setting," asserts Swanee Marcus of Columbia-Montour Family Planning, "because . . . prenatal patients need a lot of time. The large education component is time consuming." Marcus's colleague at the agency, Susan Crum, estimates that at each visit during the second half of the pregnancy. either she or Marcus spends 30–60 minutes with every patient.

Most family planning clinics finance a major portion of their prenatal care programs with public funds. The Planned Parenthood clinics in Geneva, Elmira, Schenectady and Niagara Falls, New York, for example, participate in the state health department's Prenatal Care Assistance Program (PCAP), which funds such services for women who do not qualify for Medicaid (i.e., those with incomes above the Medicaid cut-off but below 185 percent of the federal poverty level. The PCAP also funds the doctor's delivery charge, but it does not pay the hospital costs. The clinics bill the PCAP for the services they provide, as well as for the doctor's delivery fee, which they then pass on directly to the physician. Some of the New York clinics also provide prenatal care with Medicaid funds.[19]

The family planning clinics in Ohio that provide prenatal care—the Planned Parenthood affiliates in Newark, Hamilton and Cincinnati—receive annual grants ranging from $34,000 to $58,000 under the state health department's Child and Family Health Service (CFHS) program. Like the New York program, the CFHS is aimed at uninsured women who are not Medicaid-eligible, but unlike that program, the CFHS provides funds only for prenatal care, not for the doctor's delivery service. At the Cincinnati clinic, prenatal care patients pay nothing for the services they receive. And while the Newark and Hamilton clinics use a sliding fee-scale for higher income women, few of their patients pay anything for prenatal care. The Newark and Hamilton clinics also serve some Medicaid patients.[20]

Other agencies (such as the Planned Parenthood affiliates in Trenton, New Jersey, and San Diego, California) finance the bulk of their prenatal care by combining Maternal and Child Health (MCH) grants and Medicaid funds; others combine state health department grants with United Way contributions (e.g., Planned Parenthood Association of Champaign County, Illinois) or with Medicaid funds (e.g., Planned Parenthood of New York City). Planned Parenthood of Northern New England has received a substantial legislative appropriation for two years—$40,000 in 1987, $60,000 in 1988—to cover costs not reimbursed by Medicaid and patient fees at its Barre facility.

Columbia-Montour Family Planning receives a $6,000 grant from the Family Planning Council of Central Pennsylvania that enables it to serve 30 pregnant women a year. However, executive director Swanee Marcus says that $200 per patient does not cover the clinic's costs, and that private donations and some United Way funds must be used to make up the deficit. A number of administrators, in fact, report that despite the availability of public funding, their prenatal programs operate at a deficit because of low reimbursement rates; like Columbia-Montour, these clinics must rely on privately raised funds to make up the difference. One agency—Planned Parenthood of Houston and Southeast Texas—supports its prenatal program exclusively with private donations; although the agency does not charge for prenatal care, patients are asked to pay something if possible.

A few clinics operate on a fee-for-service basis; some of them charge for each visit and require an additional amount to be paid for hospital and delivery services, while others charge a set amount for a package consisting of prenatal care and delivery. Family Planning Services of Clarion County and Family Planning Services of Indiana County, for example, charge $25 for each prenatal visit (Clarion charges $30 for the initial visit), $1,200 for a vaginal delivery and $1,400 for a cesarean birth.[21] The agency will bill Medicaid or a private insurance plan if the patient has coverage. Otherwise, the patient is responsible for paying the fees herself.[22]

Planned Parenthood of South Palm Beach and Broward Counties, on the other hand, has a flat fee of $1,900 for prenatal and delivery services; $900 covers the clinic's cost of providing prenatal care and $1,000 covers the hospital's charges for a routine vaginal delivery, a hospital room and nursery care for 24 hours. Women who experience medical complications, who need a cesarean delivery or who spend more than a day in the hospital must pay the additional amounts. (Charges for prenatal care and hospital and delivery services in South Florida typically run between $5,000 and $5,500,[23] compared with a national average of $4,500.[24]) Planned Parenthood of Northwest New Jersey charges $800 to cover prenatal care and delivery (but not hospital fees); however, executive director Jeffrey Brand notes that "in reality, we don't collect $800 from everyone. . . . Some pay nothing."[25] Although the agency accepts Medicaid reimbursement and private insurance, 70 percent of its prenatal care patients have no third-party insurance coverage for maternity care.

Some clinics that use public funds to provide prenatal care are required by the state to offer certain services, such as nutrition counseling, health education and psychosocial evaluation. (However, the administrators of most of these clinics say they would offer such services even if they were not required to do so.) To hold down costs, several clinics have contracted with a local Women, Infants and Children program to provide nutrition education to their patients instead of hiring a dietitian or nutritionist. A number have hired a social worker, at least part-time; the administrators of these facilities generally believe that the addition of a social worker has been beneficial because their prenatal care patientss tend to have many personal and family problems.

## Well-Baby Care

A small number of family planning clinics with prenatal programs have considered offering (or have even begun to provide) well-child care, but most have found no need for this service because pediatricians (unlike obstetricians) are not in short supply in their areas. The two agencies that do offer well-child care are Planned Parenthood of New York City (PPNYC) and Planned Parenthood of Northern New England (at its Claremont, New Hampshire, site). PPNYC's well-child services, like its prenatal services, are restricted to teenagers, most of whom are covered by Medicaid. Adolescent mothers and their children may receive medical care and support services for up to two years after a child's birth. "We have dual goals," notes Antonia Cordera, director of social services at PPNYC's Bronx center.[26] "We provide services for a healthy pregnancy outcome, and after delivery we provide services to help teens develop coping skills and independence [and avoid] further unintended pregnancies."

Planned Parenthood of Northern New England's Claremont program has no age or income restrictions. Its well-child services date from July 1988, when it took over the operation of a privately run well-child clinic. The facility receives $15,000 from the state MCH program and $10,000 from the town of Claremont to provide well-child services; the clinic also charges nominal fees on a sliding scale, the maximum being $5 per visit. The program is staffed by nurse practitioners, some of whom also work in the family planning clinic, and by local doctors. Although the well-child clinic is open only one day per month, the program coordinator is available three days each week to make home visits to all newborns in the Claremont area and, in some cases, to provide ongoing care. Seriously ill children are referred to local visiting nurses. The agency expects to enroll about 150 children in the well-child clinic during its first year of operation, and hopes eventually to find funding to open the clinic two days a month.[27]

A different approach to child health care is the pilot project under way at the Planned Parenthood affiliate in Newark, Ohio, in which the agency oversees a child health program housed at Planned Parenthood but operated by a community action agency. The health program is directed at children and adolescents age 21 and younger. Planned Parenthood has no responsibility for the provision of services in the child health program; rather, the project seeks to link related health care programs. Planned Parenthood receives a $91,000 grant from the state Child and Family Health Services program, which it divides roughly equally between its own prenatal care program and the child health program.[28]

## Conclusions

There are no hard data on the impact of prenatal services provided in family planning clinics—either whether they make a difference over having no such services available or whether they have any greater or lesser impact than prenatal care offered by other types of providers. At the same time, the experience accumulated thus far strongly suggests that family planning clinics have an important role to play in expanding the availability of prenatal care for low-income and marginal-income women. Indeed, the family planning clinic is a logical setting to which states may want to turn if they hope to increase access to prenatal services: The facilities already exist and are often located in areas where there are few alternative providers of health care, their staffs are accustomed to providing comprehensive reproductive health care (with some staff members likely to have been trained in providing pregnancy care) and they already serve large numbers of low-income and marginal-income women of childbearing age, many of whom will need subsidized prenatal services if they become pregnant.

In the last few years, Congress has broadened eligibility for Medicaid coverage of prenatal care, and has also increased funding for the MCH block grant that goes to the states. These changes may make it easier for family planning clinics to finance prenatal services. However, they will still find it difficult to locate physicians willing to provide back-up consultation and delivery services for their patients, since obstetricians are in short supply in many

(Continued on page 144)

# Research Note

## Analyzing Teenage Births by School District

*By Jeffrey B. Gould, Mary Ostrem and Becky Davey*

### Introduction

The county or large metropolitan district is often used as the geographic unit of analysis in studies of the extent and outcomes of teenage pregnancy.[1] However, an analysis of teenage pregnancy by school district could provide information even more important for program planning, since the schools are involved in efforts to discourage teenage pregnancy and to assist students who do become pregnant.[2] Yet the literature contains no examples of this type of analysis. The purpose of this article is to describe a straightforward technique for measuring pregnancy-related events by school district. The ideal analysis would yield information on adolescent pregnancies to guide prevention efforts, and information on adolescent births to guide programs for young mothers and their infants. Here, we apply the technique to measure teenage births only, because information on abortions among teenagers (which is essential for the calculation of teenage pregnancy rates) was unavailable to us.

### Technique

We use for our illustration the 15 secondary school districts of Alameda County, California. The goal is to calculate the number of school-age teenagers in each district who gave birth between 1982 and 1984, the proportion of all births in each district that occurred among teenagers and the proportion of those teenagers who obtained inadequate prenatal care (that is, no care or care initiated in the third trimester). For the purpose of this demonstration, we have defined a school-age teenager as someone less than 17 years of age. However, the age-group used and the specific factors examined can vary according to the interests of the analytic team. The birth information was obtained by reviewing the birth certificates for the entire county (through the California Maternal and Child Health Linked Birth/Death File). On the basis of a geographic locator on the birth certificate, such as a zip code or the mother's census tract, each birth was assigned to the specific school district that contained that zip code or census tract. Because a school district's social and demographic profile is also important for program planning, we obtained certain pieces of social and economic data for the zip code area or census tract, such as median family income, from U.S. census files. These values were assigned to the school district that contained that area. The steps in the calculation are as follows:

1. *Choose a basic geographic unit.* This choice will be limited by the type of geographic indicator that is noted on the birth certificate. In most cases, the indicator is either the zip code or the census tract of maternal residence. In our example, the birth certificates for Alameda County contained both the zip code and the census tract. Because the census tract tends to comprise smaller and more demographically homogenous populations than does the zip code, we elected to use it as the basic building block for our analysis.
2. *Determine the counts for each census tract in the county.* Next, all the birth certificates for residents of the county were sorted by the census tract of maternal residence. For each census tract, we counted the total number of births, the total number of births among school-age teenagers and the total number of such teenage mothers who obtained no prenatal care or only third-trimester care.
3. *Obtain sociodemographic information for each census tract in the county.* We used the 1980 U.S. census files to determine the total population, annual median family income and percentage of households on public assistance in each school district. This and similar information, however, may be available from other sources. For example, we did not determine racial/ethnic breakdown from the census files, since most school districts could provide this information.
4. *Determine the census tract (or zip code) composition of each school district.* We then contacted each school district in order to identify its geographic catchment area. Most of the districts did not have a list of the census tracts that made up their catchment areas. However, it was possible to obtain maps or verbal descriptions of the school district boundaries (e.g., "our southern boundary is 8-Mile Road") from school personnel. The boundaries were then transposed onto a master county map that showed each census tract. For each school district, we consulted this master map to determine those census tracts that were totally within the district's boundaries and those that were partially within the district's boundaries. For those districts that shared a census tract, we estimated the proportion of the tract contained within each district through visual inspection of the map.

Because visual inspection is a potential source of error, it is advisable to use a fine mylar grid to maximize the accuracy of the estimation. The procedure is to place the grid over a census tract (or zip code) that is split by two or more school districts, and then to count the number of grid boxes that fall into each school district. The areal estimates are calculated from these grid-box counts. For example, if a tract that encompasses 88 grid boxes shows 22 grid boxes falling in school district A and 66 grid boxes in school district B, then we

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**Table 1. Computation of number and percentage of teenage births in hypothetical school district**

| Census tract within district | % of tract in district (1) | No. of births in tract (2) | No. of births in district* (3) | No. of teenage births in tract (4) | No. of teenage births in district† (5) |
|---|---|---|---|---|---|
| Tract 1 | 100 | 100 | 100 | 10 | 10.0 |
| Tract 2 | 100 | 100 | 100 | 10 | 10.0 |
| Tract 3 | 75 | 100 | 75 | 10 | 7.5 |
| Tract 4 | 25 | 100 | 25 | 10 | 2.5 |
| Total | na | na | 300 | na | 30.0 |

*Equal to cols. 1x2. †Equal to cols. 1x4.

Note: na=not applicable.

know that 25 percent of the tract's area is in District A.

5. *Determine the total number of observations per school district*. The final step was to assign observations (e.g., births, teenage births) within a census tract to each of the districts sharing that tract, based on the proportion of the tract's area contained in each school district. If, for example, a census tract had 100 observations and 25 percent of the tract was located in school district A, then 25 percent of the observations would be assigned to district A.

When employing areal estimation, one should be aware that the validity of this technique depends upon the extent to which the population is evenly spread across the census tract. For example, if the census tract described above contains a large low-income housing project within the boundaries of school district A, 90 percent of the tract's teenage births may actually be located in district A, an area that geographically represents only 25 percent of the tract.* To guard against this type of error, it is important that someone knowledgeable about the population distribution of each school district review the preliminary findings and indicate the location of any high-density population areas, such as housing projects, on a map of the school district, paying particular attention to those located on or near the school district's boundaries. If those high-density areas include shared census tracts, the areal estimates for these tracts are then adjusted.

The final count for each school district consists of 100 percent of the observations from each census tract that is *totally* contained within the district, plus the designated percentage of observations from each census tract that is *partially* contained within the district. The overall count can be rapidly calculated by developing a spreadsheet for each school district, where the rows list every tract that is totally or partially included in the district. Table 1 illustrates the computation for a hypothetical school district containing four census tracts. The variable of interest—the proportion of births in the district occurring among teenagers—can be calculated by dividing the number of teenage births occurring in the district by the total number of births there. In this case, the proportion of teenage births is 10 percent (30 divided by 300).

**Application of the Technique**

Alameda County was chosen as our example because it has a large number of births, contains 15 school districts and, for the years 1979–1983, ranked 32nd among 58 California counties in the percentage of births among women younger than 18.[3] The analysis is solely for the purpose of illustrating our technique and has not been abstracted from official state or county planning efforts.

We found that during 1982–1984, 1.8 percent of births in Alameda County occurred among girls younger than 17 (1,034 births out of 56,142). These young mothers were more than four times as likely as those 17 and older to have obtained inadequate prenatal care (11.5 percent compared with 2.6 percent).

Of the 1,034 teenage births in Alameda County, 1,024 had a valid census tract recorded on the birth certificate and could be assigned to specific school districts. The total number of teenage births estimated for the 15 school districts was 1,026; the two-birth difference probably resulted from rounding off the sum of the areal estimates to the nearest person.†

As Table 2 shows, seven of the school districts have no shared census tracts; 100 percent of the observations for these counties were counted directly. For four of the districts, only 63–66 percent of the observations could be counted directly, because the districts share a large number of census tracts. It is important to emphasize that the higher the percentage of observations directly counted, the smaller the possibility of error due to estimation.

Tables 2 and 3 summarize the results of our analysis. In Table 2, the school districts are ranked by their number of teenage births. Although the number of teenage births tends to be related to the overall number of births, there is a great deal of variation by district in the percentage of births among teenage mothers. As can be seen in Table 3, the percentage of teenage births appears to be highly related to the percentage of families on public assistance (r=0.79). The percentage of young mothers receiving inadequate prenatal care varies

**Table 2. Number of teenage births and percentage of all births occurring among teenagers younger than 17, by district, Alameda County, Calif., 1982–1984**

| School district | No. of teenage births | | | | Total no. of births | % of all births to teenagers |
|---|---|---|---|---|---|---|
| | Total | Counted directly* | Estimated† | % counted directly | | |
| Oakland | 574 | 569 | 5 | 99.1 | 19,225 | 3.0 |
| Hayward | 96 | 63 | 33 | 65.6 | 5,945 | 1.6 |
| Fremont | 75 | 75 | 0 | 100.0 | 7,401 | 1.0 |
| New Haven | 66 | 57 | 9 | 86.4 | 2,778 | 2.4 |
| Berkeley | 46 | 46 | 0 | 100.0 | 3,169 | 1.4 |
| Livermore | 43 | 28 | 15 | 65.1 | 2,319 | 1.8 |
| San Lorenzo | 40 | 25 | 15 | 62.5 | 2,814 | 1.4 |
| Newark | 30 | 30 | 0 | 100.0 | 1,998 | 1.5 |
| Alameda | 18 | 18 | 0 | 100.0 | 2,797 | 0.6 |
| San Leandro | 16 | 10 | 6 | 62.5 | 1,701 | 0.9 |
| Amador | 10 | 7 | 3 | 70.0 | 1,707 | 0.6 |
| Castro Valley | 7 | 6 | 1 | 85.7 | 1,048 | 0.7 |
| Emery | 5 | 5 | 0 | 100.0 | 224 | 2.2 |
| Albany | 0 | 0 | 0 | na | 775 | 0.0 |
| Piedmont | 0 | 0 | 0 | na | 306 | 0.0 |

*In unshared census tracts. †In shared census tracts. Note: na=not applicable.

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*In certain large urban areas that have been designated Standard Metropolitan Statistical Areas by the U.S. census, maps and population figures are available from the Bureau of the Census that further divide census tracts into approximate four-street-by-four-street blocks. If time and budget permit, these high-resolution materials can be used to estimate more precisely the distribution of observations across census tracts that are shared by two or more school districts.

†When numbers were halfway between wholes, we rounded off to the nearest even whole number.

**Table 3. Percentage of all births occurring among teenagers younger than 17 and selected school district characteristics, by district, Alameda County, Calif., 1982–1984**

| School district | % of all births to teenagers | Population | Annual median family income | % of household receiving public assistance | % of teenage births with inadequate prenatal care |
|---|---|---|---|---|---|
| Oakland | 3.0 | 336,963 | $18,169 | 17.3 | 12.8 |
| New Haven | 2.4 | 45,298 | 25,529 | 8.9 | 3.0 |
| Emery | 2.2 | 3,714 | 17,708 | 8.8 | 0.0 |
| Livermore | 1.8 | 57,600 | 27,058 | 5.0 | 9.7 |
| Hayward | 1.6 | 103,009 | 21,996 | 9.2 | 8.2 |
| Newark | 1.5 | 32,126 | 26,853 | 8.0 | 3.3 |
| Berkeley | 1.4 | 103,328 | 22,291 | 8.7 | 13.0 |
| San Lorenzo | 1.4 | 60,954 | 23,450 | 8.6 | 4.3 |
| Fremont | 1.0 | 131,960 | 27,567 | 5.3 | 17.3 |
| San Leandro | 0.9 | 17,196 | 14,568 | 7.0 | 9.4 |
| Castro Valley | 0.7 | 25,761 | 26,089 | 5.4 | 9.9 |
| Alameda | 0.6 | 62,219 | 22,685 | 6.8 | 5.6 |
| Amador | 0.6 | 45,713 | 29,861 | 4.1 | 18.0 |
| Albany | 0.0 | 15,130 | 19,591 | 6.1 | 0.0 |
| Piedmont | 0.0 | 10,498 | 41,604 | 2.7 | 0.0 |

markedly (3–17 percent) across school districts with 40 or more teenage births. There are no important patterns by income or size of school district.

## Discussion

While teenage pregnancy rates computed from births alone can be greatly underestimated, birth statistics are quite useful in the planning of pregnancy-related services. Because the school is an important location for these services, a major limitation of statistics at the county or metropolitan level is the wide variation in teenage births and related variables that is seen across school districts. For example, the summary figure for births among teenagers in Alameda County (1.8 percent of all births) masks a wide disparity in childbearing patterns between school districts. The district figures range from 3.0 percent and 2.4 percent in the Oakland and New Haven districts, respectively, to 0.0 percent in the Albany and Piedmont districts. Similar variation appears in the data on inadequate prenatal care.

The technique that we have described is important because it permits program planners to identify and address disparate needs within the same county and to compare programs between districts. Although we have limited our analysis to the number and the proportion of births among teenagers, and to the extent of inadequate prenatal care among them, our method can be used to estimate a variety of pertinent parameters by school district. For example, using demographic projections based on the 1980 census, one could estimate the number of women of reproductive age who are teenagers and calculate teenage birthrates by school district. Where abortion information is available by age and census tract of residence, one can assess the need for family planning programs based on the number of adolescent pregnancies in each school district.

When employed longitudinally, the technique of analyzing teenage pregnancy data by school district, especially when combined with the analysis of school dropout rates by district, could be used to evaluate the effectiveness of district-based programs in reducing teenage pregnancy and enabling teenage mothers to complete high school. However, in making such estimates, one must consider that not all residents of a district actually attend school there; adjustments may have to be made to account for busing, private-school attendance and interdistrict transfers.

Because of the high rates of teenage pregnancy seen in poor and minority populations,[4] it is important to account for social and demographic characteristics in assessing the various school districts. By utilizing the zip code or census tract as the basic unit of geography within school districts, the technique described makes it possible to supplement the information available from the school districts with social and demographic data from U.S. census files.

The variation in birth, health care and socioeconomic indicators across Alameda County school districts suggests that even within areas as small as counties, sufficient meaningful differences may exist between populations to justify districtwide, school-based interventions as alternatives to county-based or statewide programs. Utilizing the analytic approach presented in this article, school districts can develop teenage pregnancy programs that match their level of need and the particular characteristics of their populations.

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## Corrections

In "A Direct Mailing to Teenage Males About Condom Use: Its Impact on Knowledge, Attitudes and Sexual Behavior," by Douglas Kirby, Philip D. Harvey, David Claussenius and Marty Novar [**21**:12, 1989], reference is made in the second paragraph after the introduction to the Ounce of Prevention Fund in Illinois. It was actually the Illinois Parents Too Soon program that developed, funded and supervised the media campaign. The Ounce of Prevention Fund did not play a role in that campaign.

Table 2 of "Sex Education and AIDS Education in the Schools: What States and Large School Districts Are Doing," by A. M. Kenney, S. Guardado and L. Brown [**21**:56, 1989], should indicate that the Massachusetts state curriculum includes the topic of abstinence and does **not** include the topic of pregnancy prevention.

In Table 1 of the Research Note "Teenage Abortion, Birth and Pregnancy Statistics: An Update," by Stanley K. Henshaw and Jennifer Van Vort [**21**:85, 1989], the population base for rates for women under 15 is 14-year-old females.

# Documents

## The Fight over *Roe* v. *Wade:* The *Webster* Briefs

In June 1986, the state of Missouri enacted a bill requiring, among other things, that all women seeking an abortion after 16 weeks of gestation have it performed in a hospital; that a physician asked to perform an abortion on a woman pregnant for more than 20 weeks conduct a series of elaborate tests to determine if the fetus is viable; and that public funds, public employees and public facilities not be used to perform or help perform abortions or to counsel or encourage a woman to have an abortion. The statute also had a preamble stating that life begins at conception.

The statute was immediately challenged in federal district court, which struck down most of these provisions in June 1987; the state then appealed the decision to the U.S. Court of Appeals for the Eighth Circuit, where the district court decision was upheld in July 1988. Following the appellate court's ruling, the state turned to the U.S. Supreme Court, which accepted the case (*Webster et al.* v. *Reproductive Health Services et al.*) in January 1989. At that point, in an almost unprecedented step, the Department of Justice filed an *amicus curiae* brief that extended Missouri's original arguments and requested that the Court consider overturning *Roe* v. *Wade*. Because of the far-reaching implications of the case, 78 friend-of-the-court briefs were filed, more than in any previous Supreme Court case.

Below, highlights of the briefs of the state of Missouri (the appellants) and of those challenging the statute (the appellees) are presented, along with extracts of a few of the relevant amicus briefs. On April 26, 1989, the Court heard oral arguments in the case; the Court is expected to release its decision late in June or early in July.

### Brief for the Appellants

. . . Six years ago, Justice O'Connor observed in her dissent in *Akron* v. *Akron Center for Reproductive Health*[1] that "[the] Roe framework . . . is clearly on a collision course with itself. . . ."

The evidence presented by the parties in this action dramatically demonstrates the accuracy of Justice O'Connor's prediction. The testimony of medical experts for both parties and the documentary evidence overwhelmingly established that a woman who appears to be carrying an unborn child of twenty weeks gestational age (LMP) may have a viable unborn child under 1986 medical technology. . . .[2]

The facts established in this case make it very evident that the concept of viability is entirely arbitrary. It is simply a discretionary point which may shift because of the opinion of a physician requested to perform an abortion or due to the availability of medical facilities to preserve the life of the premature baby. . . .

The State of Missouri therefore submits that its compelling interest in protecting human life exists throughout pregnancy. The trimester approach of *Roe* v. *Wade* has been rendered impotent by advances in prenatal medicine and the arbitrariness of the lines drawn by the majority. . . .[3]

It has now been sixteen years since the Supreme Court decided *Roe* v. *Wade*. Criticism regarding the legitimacy of the right declared fundamental in *Roe* v. *Wade* continues unabated since the date of the decision. . . . [The] circumstances presented by this case, the fifteenth abortion case since *Roe* v. *Wade* and *Doe* v. *Bolton* to be considered by the Court, warrant a careful look at the path the Court has followed. . . .

It is Missouri's position that the values implicit in the Constitution do not compel recognition of abortion liberty as fundamental. . . .

. . . It cannot be seriously argued that a right to engage in abortion is "deeply rooted in this Nation's history or tradition" or "implicit in the concept of ordered liberty." As the Court acknowledged in *Roe* v. *Wade*,[4] and as Justice Rehnquist emphasized in dissent,[5] state laws restricting abortion were widely in force throughout the nineteenth and twentieth centuries.

In both *Akron* and *Thornburgh*, this Court reaffirmed *Roe* on the grounds of *stare decisis*.[6]* Although the principle of *stare decisis* weighs against reconsidering precedents in order to promote the continuity and consistency of adjudication, the principle does not demand total obedience in constitutional litigation. . . .

Where a judicial scheme affecting the allocation of constitutional powers has proven "unsound in principle and unworkable in practice," or where it "leads to inconsistent results at the same time that it disserves principles of democratic self-governance," this Court has not hesitated to reconsider a prior decision.[7] Consequently, the appellants submit that the doctrine of *stare decisis* should not deter this Court from altering a constitutional decision "when it has become apparent that a prior decision has departed from a proper understanding" of the Constitution. . . .[8]

*From the amicus brief of the Solicitor General of the United States:*

. . . *Roe* v. *Wade*, as the Court is well aware, has been intensely controversial from the day it was decided. That controversy is more than simply a reflection of the deep divisions in American society over the underlying question of abortion. Rather, the controversy has, in substantial measure, been a product of the decision itself. *Roe* rests on assumptions that are not firmly grounded in the Constitution; it adopts an unworkable framework tying permissable state regulation of abortion to particular periods in pregnancy; and it has allowed courts to usurp the function of legislative bodies in weighing competing social, ethical, and scientific factors in reaching a judgment as to how much state regulation is appropriate in this highly sensitive area. . . .

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**Stare decisis* is a doctrine by which the courts follow rules or principles laid down in previous decisions, and reverse earlier rulings only when there are overwhelming reasons to do so.

. . . [The] Court has indicated that an interest will be deemed to be Constitutionally fundamental if it is "implicit in the concept of ordered liberty"[9] or "deeply rooted in this Nation's history and tradition."[10] It cannot be credibly argued, however, that the abortion decision forms a part of any historically recognized right that is fundamental in this sense. . . . [State] laws condemning or limiting abortion were very common at the time the Fourteenth Amendment was adopted. . . .

The most plausible source of support for a fundamental right to abortion lies in the Court's "privacy" decisions that antedate *Roe*. But even assuming that cases like *Griswold* v. *Connecticut*[11] and *Eisenstadt* v. *Baird*[12] establish a general right to privacy or personal autonomy . . . , it does not follow that the abortion decision is encompassed within such a right. "The pregnant woman," this Court acknowledged,[13] "cannot be isolated in her privacy." Her decision to seek an abortion is "inherently different" from decisions concerning marital privacy and the use of contraceptives because it "involves the purposeful termination of a potential life.". . .[14]

The "viability" standard is particularly unworkable as a constitutional reference point because, as the Court has acknowledged, the point when a fetus may survive outside the womb with artificial aid changes with "advancements in medical skill."[15] The "increasingly earlier fetal viability" demonstrated in recent scientific studies[16] is the product of improvements in medical techniques, not of any change in our perceptions about how fully developed or worthy of life a fetus is at any point in time. It is disturbing to attribute constitutional significance to a point which, besides being in motion rather than being fixed, moves in response to advances in medical science rather than in response to forces more familiar to traditional judicial analysis. . . .

### Brief for the Appellees

. . . *Roe* was a logical and necessary outgrowth of the long line of cases preceding it which . . . embodied the principle that the value our society places on individual autonomy demands that decisions with a profound effect on personal identity and destiny be placed largely beyond the reach of government. . . .

. . . [In] overruling *Roe*, this Court would, for the first time in its history, withdraw from constitutional protection a previously recognized fundamental personal liberty. Concomitantly, also in an unprecedented manner, constitutionally protected conduct undertaken daily by literally thousands of citizens would be open to abrupt criminalization.

[In addition, because] *Roe* is a necessary outgrowth of the sixty years of constitutional evolution delineating the right to privacy, overruling it will open to question the fundamental principles of personal autonomy upon which that right rests, principles which continue to be recognized and applied pervasively in American law.

The State and the Solicitor General . . . argue that abortion is not a fundamental right because it is not "implicit in the concept of ordered liberty" or "deeply rooted in the Nation's history and tradition," in part because abortion was illegal in many states by the time the fourteenth amendment was adopted. Factually, they give an incomplete view of history, and legally their conclusions are fallacious. . . .

The Solicitor General's most serious error is his argument that a fundamental right to abortion does not flow logically out of the general right to privacy or personal autonomy which protects matters of procreation and family life, including contraception, because the woman is not "isolated in her privacy" in making the abortion decision. Apparently, the Solicitor General believes that the presence of the fetus, rather than going to the nature of countervailing state interests, as acknowledged in *Roe*, undercuts the "fundamental" nature of the right itself.

This line of argument misconceives the nature of the "privacy" right in such cases as *Griswold* and *Eisenstadt*. That right is in no way dependent on whether an individual is "isolated" in his or her privacy. Such decisions are best left to the individual rather than the state, not because of some abstract value in solitary decisionmaking, but because of the profound effect such decisions have on an individual's destiny. . . .[17]

Indeed, if this Court adopts the Solicitor General's proposed analysis of fundamental rights, . . . it will have set itself on a course which reaches far beyond the narrow issue of proscription of abortion. If the presence of the fetus demotes the pregnant woman's privacy right to less-than-fundamental status, what other incursions on her personal liberty will be allowed? Since she is no longer "isolated in her privacy," will government be able to dictate her lifestyle and working conditions with the only proviso being that such restrictions pass a "rational basis" test? . . .

. . . The State's and Solicitor General's argument that viability is unworkable [as the marker for the point at which the state's interest becomes compelling] because it is a "shifting" point is both factually exaggerated and legally unsound.

Contrary to the State's assertion, there is no evidence that viability is moving inexorably toward conception. All available evidence indicates little if any change in this Court's original understanding that viability, a flexible point, arises between the twenty-fourth and twenty-eighth weeks of pregnancy. . . .[18]

Moreover, as a legal proposition, there is nothing "unworkable" or novel about the fact that the viability of a particular fetus and hence the physician's duties under the criminal law may vary depending on the state of medical technology, the place where the abortion is performed, and the medical facts of the individual woman's pregnancy. . . .

. . . [The] wisdom of an abortion regulation tied to viability is that it does not require legislative action in order to adjust to changes in technology. Rather, the physician's obligations under such a regulation change as technology changes, in the same manner as physicians' tort law obligations continuously change to reflect improvements in all areas of medical care.

*From an amicus brief filed by four organizations:**

. . . To become "deeply rooted" in our history and tradition, a right need not have existed for generations or centuries. Just nine years after this Court decided *Brown* v. *Board of Education*,[19] the Court characterized the rights recognized in *Brown* as "long-declared and well-established individual rights."[20] Within a short period of time, through desegregation efforts all over our country, the rights recognized in *Brown* became "deeply rooted" in our nation's history and tradition.

So, too, the abortion right has become "deeply rooted" in this nation through its exercise by women, and through its acculturation and assimilation into their lives and our society. The right has been exercised by approximately 20 million women, including five million teenage girls. Every year, 42 percent of the 1.1 million teenagers who become pregnant choose to end their pregnancies through abortion.[21] Millions of girls and women today—those aged approximately 13 to 29—have never known childbearing life without this fundamental right.... To overrule *Roe* v. *Wade* would radically alter the lives of a generation of women and girls who have grown up with the liberty to shape their own future by choosing whether and when to bear children.

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*The Center for Population Options, The Society for Adolescent Medicine, The Juvenile Law Center and The Judicial Consent for Minors Referral Panel.

That the abortion right now has deep roots is not refuted by statutory restrictions once placed upon abortion commencing in the late nineteenth century. Current advances in medical procedures for abortion have vitiated the primary purpose of the nineteenth century laws—the protection of the woman's life and health....[22] The one-time prevalence of now out-dated statutes cannot justify contemporary denial of constitutional rights....[23]

*From an amicus brief filed by nine organizations and five individuals:**

... All individuals have a fundamental right to be free from government-mandated harm to health. Absent extraordinary circumstances, this right restrains the state from inflicting health risks on citizens and from dictating the degree of risk an individual should bear.

State laws impeding a woman's right to an abortion interfere with the individual's freedom from governmental imposition of health risks. Such laws have disastrous effects on the health of women, subjecting them to the risks associated with pregnancy and childbirth, delayed abortions, illegal abortions and self-induced abortions. The fundamental principle that the state cannot constitutionally compel a woman to risk her health requires strict scrutiny of any state action that limits access to abortion.

The Missouri statute challenged here directly impinges on the individual's right to be free from government-mandated harm. Central to this right is respect for individual autonomy in deciding matters affecting one's own health. The ban on abortion counseling harms women's health by undermining the physician-patient relationship and preventing physicians from conveying medically necessary information to their patients. The ban on the performance of abortions by public employees or in public facilities prevents women from obtaining abortions to preserve their health. The blanket requirement that physicians conduct a series of tests on pregnant women to determine fetal viability compels women to submit to potentially dangerous procedures and overrides the judgment of treating physicians as to what procedures are medically necessary or advisable for their patients. Each of these provisions violates the constitutional principle that the state may not harm its citizens by thrusting health risks upon them, and therefore must be struck down....

*From an amicus brief filed by 23 international organizations and 14 individuals:*†

... Contrary to the Government's contention, Western democracies, with which the United States shares a common cultural, moral and political tradition, do not entrust fundamental questions of reproductive freedom to the unfettered discretion of national legislatures....

The trimester-based framework of *Roe* v. *Wade* is reflected in the decisions of courts and legislatures throughout the Western world. These legislative and judicial bodies, like this Court, have uniformly rejected the notion that potential human life is qualitatively the same throughout all the stages of gestation, and therefore have rejected attempts to enact into law recognitions of fetal personhood from the moment of conception....

*From the amicus brief of the American Psychological Association (APA):*

... Appellants' argument that this Court should overrule *Roe* rests on their claim that the *Roe* Court did not fully comprehend the alleged psychological threats to a woman's health brought about by seeking and obtaining an abortion.... Many of the APA's members have studied the psychological effects of abortion or have published comprehensive reviews of the substantial body of research literature on this topic. Their work reveals that appellants' claims cannot be supported....

The prohibition on the use of public funds for abortion-related counseling significantly undermines important interests that the State claims it wishes to advance. The prohibition essentially denies a significant proportion of women seeking abortions or coping with an unwanted or problem pregnancy the benefit of gathering and receiving crucial information uncensored by the State and unduly restricts health care providers' ability to communicate their professional judgment and requires them to violate ethical requirements to provide such information....

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*The American Public Health Association, The Alan Guttmacher Institute, The American College of Preventive Medicine, California Physicians for Choice, California Republicans for Choice, The City of New York, The Commonwealth of Massachusetts Department of Public Health, The National Abortion Federation and The New York State Republican Family Committee, as well as the dean of the Berkeley School of Public Health, University of California, the dean and associate dean of the University of Washington School of Public Health and Community Medicine, the dean of the Columbia University School of Public Health and the chairman of the Yale University Department of Epidemiology and Public Health.

†The Abortion Rights Coalition (Australia), The Association for the Legal Right to Abortion (Australia), The D. K. T. Memorial Fund, The Family Planning Association of New South Wales, The International Fund for Health and Family Planning, International Projects Assistance Services, The International Women's Health Coalition, Marie Stopes International, The National Abortion Campaign (Great Britain), The Pathfinder Fund, Population Crisis Committee, The Population Council, Population Planning Associates, Population Services International, PRETERM Foundation (Australia), The Program for the Introduction and Adaptation of Contraceptive Technology, Toleration (Australia), Transnational Family Research Institute, Women's Abortion Action Campaign (Australia), Women's Economic Network, Women's Electoral Lobby Australia and Women's Global Network on Reproductive Rights.

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# DIGEST

## Majority of Americans Oppose Overturning *Roe* v. *Wade* and Banning Abortion Outright, Polls Show

In the months leading up to the Supreme Court decision on *Webster* v. *Reproductive Health Services*, the case being used to challenge *Roe* v. *Wade*, a number of nationwide polls were conducted to sound public opinion about abortion. The results indicate that a majority of Americans affirm a woman's right to choose abortion over the government's right to interfere in that decision: About 57 percent of those polled are opposed to overturning *Roe* v. *Wade*, and about 65 percent are opposed to an outright ban on abortion. Nevertheless, the public's attitude toward abortion is often contradictory, and appears to depend to a large extent on what aspects of the issue are addressed in the survey and on how the questions are worded.

The data presented here are from seven nationally representative telephone surveys: two Gallup polls—one conducted in December 1988 among 1,213 adults and the other conducted in September 1988 among 1,001 adults;[1] a poll of 999 registered voters carried out by Hamilton and Staff in December 1988;[2] a poll taken by Louis Harris and Associates in January 1989 among 1,248 adults;[3] a *Los Angeles Times* poll conducted in March 1989 among 3,583 adults;[4] a *Boston Globe*/WBZ poll of 1,002 registered voters carried out in March 1989;[5] and a *New York Times*/CBS News poll of 1,412 adults taken in April 1989.[6] All the polls had a margin of error of plus or minus three percentage points.

The Harris and Gallup polls asked respondents directly if they were in favor of or opposed to the Supreme Court's overturning *Roe* v. *Wade*. A majority (57–58 percent) said they were opposed to such a decision, and a minority (37–40 percent) said they were in favor of it. The Hamilton and Staff survey, which asked respondents if they generally favor or oppose "keeping it legal for women to be able to choose to have abortions," found that 60 percent of respondents were in favor of maintaining the status quo. However, when respondents to the same poll were asked whether they agreed or disagreed with the statement: "Abortion is a private issue between a woman, her family and her doctor [and] the government should not be involved," an even larger majority (73 percent of respondents) said they agreed. The *Los Angeles Times* poll, which asked respondents their opinion of "the Supreme Court decision which permits a woman to get an abortion from a doctor at any time within the first three months of her pregnancy," found that 46 percent were in favor of it, 35 percent were opposed to it and a relatively high proportion (19 percent) had no opinion. Respondents to the *Boston Globe*/WBZ poll were opposed to "wiping out nationwide standards about abortion and permitting each state to decide whether abortions are legal" by a 50–34 percent margin.

Three surveys—the Harris poll, the *Los Angeles Times* poll and the Hamilton and Staff poll—sounded public opinion about the passage of a constitutional amendment banning abortion. The surveys found overwhelming opposition to such an amendment, with 62–68 percent of Americans opposed to it and 24–29 percent in favor of it. Further, according to the *Los Angeles Times* and *New York Times*/CBS News polls, only 31–39 percent of Americans believe that making abortion illegal would reduce the number of abortions in the United States, while 52–62 percent believe that doing so would not have that effect.

In the three surveys that asked about public funding for abortion, 48–52 percent of respondents were against such funding, 35–40 percent were for it and 10–16 percent were undecided. However, according to the Gallup and *Los Angeles Times* polls, 63–66 percent of Americans said they favor federal financing of family planning clinics that provide abortion counseling.

The *Boston Globe*/WBZ and Gallup polls found that overall, about 25 percent of Americans think abortion should be "legal under any circumstances," about 55 percent think it should be "legal only under certain circumstances" and just under 20 percent think it should be "illegal in all circumstances." However, the *New York Times*/CBS poll found that 49 percent of the public believe abortion should be "legal as it is now," 39 percent think it should be "legal only in certain cases" and only nine percent believe it should "not be permitted at all." The Hamilton and Staff poll found that 40 percent of Americans believe that an abortion should be "available to any woman who wants one," 50 percent think abortion should be "available under certain circumstances" and eight percent believe it should "not be allowed."

Four of the polls (Gallup, *Los Angeles Times*, *Boston Globe*/WBZ and *New York Times*/CBS) asked respondents under what specific circumstances they think abortion should be legal or illegal. The results show that Americans are overwhelmingly in favor of keeping abortion legal when the woman's life is endangered by the pregnancy (86–94 percent), when the woman's health would be severely damaged by the pregnancy (81–88 percent), when the pregnancy is a result of rape or incest (84–86 percent), or when there is a strong chance that the baby will be born seriously deformed (60–74 percent). On the other hand, only a minority of the public think that abortion should be legal if the family cannot afford to have another child (19–43 percent), if the woman is unmarried and does not want to marry the man (40–42 percent), if the pregnancy interferes with the woman's work or education (26 percent) or if abortion is used as a form of birth control (6–13 percent).

According to the Harris poll, *Roe* v. *Wade* is supported by a majority of Americans in all demographic subgroups examined except for white evangelical Protestants and people with less than a high school education. Both the Gallup and *Boston Globe*/WBZ polls found no significant differences in abortion views between men and women and Republicans and Democrats. Overall, these two surveys found that whites, college graduates, those with family incomes of $40,000 or more, and people living in the East and West are more likely than others to hold liberal attitudes toward abortion, whereas nonwhites, evangelical Protestants, the less educated and the less affluent are more likely to hold more conservative opinions.

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## American Women's Use Of Breast and Cervical Cancer Screening Grows

**The proportion of American women who have never been screened for breast and cervical cancer has declined sharply in recent years, from 16–17 percent of 20–79-year-olds in 1973 to only five percent of such women by 1985. According to a report from the National Center for Health Statistics, women are now slightly more likely to have been screened in the last two years than was the case in 1973, with 70 percent having had a recent breast examination and 65 percent a recent Pap test.[1] However, despite the improved use of these preventive health services, particularly among older women and blacks, inequities still exist: Poor women and older women remain less likely than other women to undergo cancer screening, even though most unscreened women have made a recent visit to a physician.**

Trends in American women's utilization of tests to detect hypertension, breast cancer and cervical cancer were reviewed with data from the annual National Health Interview Survey, a probability sample of the U.S. civilian noninstitutionalized population. Questions regarding the use of Pap tests and clinical breast examinations were included in the 1973 and 1985 surveys, and questions regarding the use of blood pressure tests were part of the 1974 and 1985 surveys. Besides analyzing the proportions who had never had such tests, the researchers looked at whether women in various subgroups had been tested recently and whether those who had not had visited a physician within the last two years.

In 1973, 16 percent of women aged 20–79 had never had a breast examination; by 1985, the age-adjusted proportion had declined to five percent. Sixty-six percent of women surveyed in 1973 had had a breast examination in the previous two years, a proportion that had risen to 70 percent by 1985. Although fewer black women than white women had had a recent breast examination in 1973 (62 percent and 66 percent, respectively), the increase in utilization of such services was far larger among black women over the next 12 years than it was among whites. Consequently, in 1985, more black women than white women reported a recent breast exam (75 percent vs. 69 percent).

In 1985, women aged 60–79 were less likely than women aged 20–59 to have had a breast examination (11 percent vs. four percent). Despite the fact that the risk of breast cancer is greater among older women than among younger women, the proportion of women who had recently been screened for the disease declined with age, from 78 percent of those aged 20–39 in 1985 to 56 percent of those aged 60–79. Nonetheless, older women showed a 12 percentage-point gain in screening over the 12-year period, a greater improvement than the gain of four percentage points among women aged 40–59 and the lack of improvement seen among young women. In 1985, poor women (defined as those with family incomes of less than 125 percent of the federal poverty level for a family of their size) were about 10 percentage points less likely than other women to have had a recent breast examination.

As with examinations for detection of breast cancer, fewer women reported never having had a Pap test for the detection of cervical cancer in 1985 than in 1973. The age-adjusted data indicate that only five percent of the women surveyed in 1985 had never had a Pap smear, down from 17 percent in 1973. The overall prevalence of the two tests was similar in both years, perhaps because they often are performed during the same physician visit. In 1985, 65 percent of the women had had a Pap test within the previous two years, fewer than had had a recent breast examination and only one percentage point more than had had a recent Pap test in 1973. Nonetheless, there were sizeable gains among certain subgroups of women: For example, with an 11 percentage-point gain between 1973 and 1985, black women surged past white women in their utilization of Pap tests; by 1985, 71 percent of black women had had a recent Pap test, compared with 64 percent of whites (the latter proportion was unchanged from 1973).

The proportion of women aged 60–79 who had had a recent test rose by five percentage points over the 12 years, while there was no improvement among women younger than 60. Despite this improvement, however, older women were far less likely than younger women to obtain Pap tests: In 1985, only 43 percent of them had recently had a Pap test, compared with 60 percent of women aged 40–59 and 78 percent of those aged 20–39. Much of this difference may be related to the fact that the proportion of women who have had a hysterectomy increases with age, although the American College of Obstetricians and Gynecologists recommends that Pap tests be continued even after a hysterectomy. The proportion of poor women who had had a recent Pap test lagged some 10 percentage points behind that of nonpoor women.

In both 1974 and 1985, virtually all women had had a blood pressure test at some time during their lives, and the age-adjusted proportion who had had such a test in the past year increased from 76 percent in 1974 to 79 percent in 1985. Subgroups at greatest risk of hypertension were the most likely to have had a test within a year of the 1985 survey. Women aged 60–79 who were no more likely than younger women to have been tested for hypertension in 1974, displayed the greatest increase in such testing over time.

The majority of women who had not had a recent breast examination or Pap test had nonetheless visited a physician recently. Seventy-two percent of those who had not had a breast examination in the two years prior to 1985 had gone to a doctor within that time, as had 75 percent of those who had not had a recent Pap test. In both cases, the proportion who had recently visited a physician was highest among women aged 60 and older, the age-group least likely to have had a breast examination or Pap test. Even among the poor, the majority who had not had these tests within two years had had some physician contact in that time. Some recent visits were undoubtedly made to specialists and to emergency rooms, medical care situations in which preventive health screening is less likely to be performed.

The authors consider the increased use of screening procedures since 1973, particularly among older women and black women, to be an encouraging trend. However, except for blood pressure tests, older women are still less likely than younger women to obtain these preventive health services, even though they are at higher risk of breast cancer and cervical cancer. In addition, poor women of all ages remain the least likely to be screened.

The authors of the study conclude that "further efforts to encourage use of preventive care are warranted, especially for selected subgroups." They note that screening deficiencies, particularly for breast and cervical cancer, appear to be due largely to "a lack of emphasis on cancer prevention for women who have had contact with the health care system."

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## Nurses' Home Visits to High-Risk Mothers Increase Employment and Reduce Subsequent Pregnancies

A program of home visits by nurses appears to have helped poor, unmarried and teenage women who were pregnant avoid some of the adverse educational and economic consequences associated with their having a child. In contrast to a comparison group of women who were not visited at home by a nurse, the participants were more likely to be employed four years later, were less likely to have had a subsequent pregnancy and had spaced their later pregnancies more widely.[1]

Under the program, which was carried out in a small semirural county in upstate New York, five specially trained nurses visited high-risk women during and after pregnancy to teach them about fetal and infant development, child care, family planning and proper health care for themselves both during and after pregnancy. The nurses also helped the participants plan their return to school or work or their entry into vocational training.

From 1978 to 1980, 400 women pregnant with their first child were enrolled in the program, all before the 30th week of their pregnancy. Women who were under 19 years of age and were single or of low socioeconomic status (all high-risk categories) were actively recruited, but anyone having her first child was eligible. Forty-seven percent were under 19, 62 percent were unmarried and 61 percent were poor. Fifteen percent were in no high-risk groups; 23 percent were in all three.

Participants were assigned at random to four treatment groups: The children of women in the first group were to be examined by an infant specialist at ages one and two; so those with problems could be referred to specialists (if necessary). The women in this group were to receive no other special services through the project. Women in group two were to be given free transportation to local clinics and doctors' offices for prenatal and well-child care, and their children were also to be screened by the specialist. Besides these services, women in group three were assigned nurses who were to make home visits every two weeks during pregnancy, but not after. Finally, women in the fourth group were to receive the same services as those in group three, but were also to be visited regularly both during pregnancy and for two years after delivery. All women were interviewed at regular intervals over a four-year period.

Before receiving any services, the women in the four treatment groups were relatively similar in their socioeconomic and demographic characteristics. Only 46 nonwhite women could be recruited into the study, so these women were dropped from the analysis; thus, the results are for white women only. Because there proved to be no differences in their use of prenatal and well-child services, the first two groups were consolidated into one control group.

Six months postpartum, among those who had not finished high school by enrollment, women who were visited after delivery were far more likely to have completed school or to have registered in an educational program than were those in the control group (59 percent vs. 27 percent). However, by 22 months, there was no difference between these groups in the proportion graduated or enrolled, and by 46 months all differences in number of years of education had disappeared.

Home visitation seems to have affected employment, child care and use of public assistance among certain high-risk subgroups. For example, by 10 months postpartum, the poor, unmarried teenagers who had been visited were more concerned about finding work than were similar comparison teenagers, a difference still evident at 22 months. During the two-year period after the program ended, the nurse-visited, poor, unmarried teenagers indeed began to work more than their counterparts in the comparison group. Twenty-two months after delivery, poor, unmarried women 19 or older who were in group four had worked for more than twice as many months as the comparison women (9.3 vs. 3.6); by 46 months, the former still had been employed longer (16.4 vs. 7.1 months). At 10 months, the older women in group four were more likely than the comparison women to have sought child-care help from other family members and friends. Finally, over the first two years postpartum, poor, unmarried older women in the program spent 40 percent less time on public assistance than did the comparison women, although the difference was not statistically significant.

Through the 24 months of the program, unmarried poor women of all ages who were visited had significantly fewer subsequent pregnancies than did similar comparison women (0.17 and 0.51, on average). This differential persisted for two years after the end of the program: At 46 months after childbirth, the poor, unmarried women who had been visited at home had had half as many subsequent pregnancies as the comparison women (0.58 vs. 1.02). In addition, after four years, the mean birth interval between the women's first birth and their next child was 12 months greater among the poor, unmarried women in group four than among the corresponding comparison women (49 months vs. 37 months).

The investigators caution that some of the differences noted might have been a result of unavoidable biases: At the start of the study, the women assigned to group four had a greater sense of personal control over their lives and reported receiving more support from their boyfriends; while the researchers controlled statistically for the effect of this difference, they point out that there may have been other, undetected differences between the groups. In addition, the number of cases in many subgroups was small.

Furthermore, the generalizability of the results may be limited, for several reasons. The nurses in the program were hired and trained especially for it, and had small caseloads. In addition, the study area lacks a hard-core poverty population, and so is not representative of most poor inner-city communities in the United States, especially since nonwhites had to be excluded from the analysis.

Although the program was relatively expensive, the investigators note that the positive results reported in this and related studies examining the impact of the program on the outcome of the women's first pregnancy[2] and the quality of care that the mothers provided their children[3] suggest that the potential cost-savings of such a program could be substantial. They conclude that "home-visiting nurses, working closely with parents and existing health and human service providers, may be able to produce demonstrable improvements in many aspects of maternal . . . functioning that heretofore have been the province of several separate services. With augmented training, reasonable caseloads, and focused efforts, community health nurses could play a decisive role in reducing many of the risks and unfavorable outcomes associated with childbearing among poor, unmarried women."

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## One in Five Pregnant Women Are Smokers, New U.S. Study Shows

Although pregnant women are less likely to smoke cigarettes and are more likely to have quit smoking than their nonpregnant counterparts, over one-fifth of pregnant women continue to smoke during pregnancy. Black women are the least likely to smoke during pregnancy, while older women and unmarried white women are the least likely to break the habit while pregnant. These are the highlights of a study that examined the prevalence of smoking among currently pregnant and nonpregnant U.S. women.[1]

Data for the analysis came from telephone interviews carried out between 1985 and 1986 among women aged 18–45 living in the 26 states whose health departments participate in the Behavioral Risk Factor Surveillance System. The final sample consisted of 836 pregnant women and 18,025 nonpregnant women. Because the pregnant women tended to be younger than their nonpregnant counterparts, the data in the analysis were adjusted for age.

Overall, pregnant women were as likely as nonpregnant women to have ever smoked (43 percent and 45 percent, respectively).* However, pregnant women were less likely than nonpregnant women to be current smokers (21 percent vs. 30 percent) and were more likely to be former smokers (22 percent and 15 percent, respectively). Furthermore, among those who were classified as current smokers, pregnant women were less likely than their nonpregnant counterparts to smoke heavily (38 percent vs. 52 percent).

Analyses of pregnant and nonpregnant women according to age-group, race, level of education and marital status revealed that in most subgroups, the difference in current smoking prevalence falls within the same range (7–9 percentage points) as that observed for the total sample. For example, among 18–24-year-olds, 21 percent of pregnant women and 28 percent of nonpregnant women were current smokers, a difference of seven percentage points; among all whites, 22 percent of pregnant women and 30 percent of nonpregnant women were current smokers, a difference of eight percentage points. There were two exceptions to this general pattern, however: Among women aged 35–45, the difference in smoking prevalence between pregnant and nonpregnant women was only three percentage points (26 percent vs. 29 percent), while among the unmarried, pregnant women were slightly more likely than nonpregnant women to be current smokers (36 percent vs. 34 percent). Further analysis indicated that only unmarried pregnant white women had a substantially higher prevalence of current smoking than did their nonpregnant counterparts (48 percent vs. 35 percent).

Black women were the least likely of any group to smoke during pregnancy: Sixteen percent of pregnant black women were current smokers, compared with 30 percent of nonpregnant black women, a difference of 14 percentage points. There was little difference between the proportions of pregnant and nonpregnant black women who had ever smoked; consequently, the decrease in prevalence among the pregnant women is mainly attributable to quitting. On the other hand, the only comparably large differential (a 15-percentage-point difference between pregnant and nonpregnant 30–34-year-olds) is mainly attributable to a difference by pregnancy status in the proportion of women in that age-group who had ever smoked.

Overall, among current smokers, pregnant women smoked fewer cigarettes daily than did nonpregnant women (12 cigarettes vs. 20 cigarettes). However, there was little difference in several subgroups: Among women 35–45, both pregnant and nonpregnant women smoked an average of 20 cigarettes per day, and among blacks, both pregnant and nonpregnant women smoked an average of 10 cigarettes a day. Among whites, pregnant smokers smoked 15 cigarettes daily, while nonpregnant smokers smoked 20.

The researchers conclude that unless there have been major changes in smoking prevalence since 1986, the government's health objective to lower the prevalence of smoking among pregnant women to no more than half that among nonpregnant women by 1990 will not be attained, especially among older women and unmarried white women. However, the investigators also point out that their findings should be interpreted with caution because of the small sample sizes in some subgroups. Further, they maintain that since the study did not collect information on why women quit smoking, it is not possible to determine whether pregnant former smokers quit smoking because of their current pregnancy or as a result of other factors.

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*Respondents who reported having smoked at least 100 cigarettes in their lives were categorized as ever-smokers. Ever-smokers were further classified as current smokers and former smokers. In addition, those who said that they currently smoked 20 or more cigarettes each day were regarded as heavy smokers.

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## Progestogens in the Pill Modify Levels of Serum Lipids, WHO Study Finds

The progestogen component of combined oral contraceptives induces changes in serum lipid levels that may affect a woman's risk of developing certain diseases, according to a recent prospective study conducted by the World Health Organization. For example, pills containing the progestogen levonorgestrel raise the level of low-density lipoprotein cholesterol and decrease the level of high-density lipoprotein cholesterol; both types of changes have been associated with an increased risk of atherosclerosis. On the other hand, pills containing norethisterone acetate do not appear to cause such unfavorable changes in cholesterol levels, although they do raise levels of serum triglycerides.[1]

The study was carried out among female volunteers aged 18–35 at research centers in Bangkok, Thailand; Göteborg, Sweden; and Mexico City, Mexico. Women who had used hormonal steroids fewer than 70 days before admission to the study were excluded, as were those who had previously used hormonal contraceptives for more than three years. Participants were randomly assigned to take pill preparations containing 250 mcg of levonorgestrel and 50 mcg of ethinyl estradiol; 250 mcg of levonorgestrel and 30 mcg of ethinyl estradiol; 150 mcg of levonorgestrel and 30 mcg of ethinyl estradiol; or 1 mg of norethisterone acetate and 50 mcg of ethinyl estradiol. Members of a control group consisting of users of the TCu 220c IUD were recruited at each center.

Blood samples were taken from all participants at entry and again during the third and 12th months of the study to measure levels of high-density lipoprotein (HDL) cholesterol, low-density lipoprotein (LDL) cholesterol, total cholesterol and total triglycerides. The researchers compared the serum lipid levels measured among women taking each of the four pill preparations with those among IUD users. Results were examined for all centers combined and for each individual center.

The final sample, which included only the women who remained in the study for the full 48 weeks, consisted of 241 pill users and 87 IUD users, representing 59 percent and 73 percent, respectively, of the women originally recruited. Follow-up rates varied among the centers: Only 40 percent of the women recruited in Mexico completed the study, compared with 79 percent and 74 percent of those recruited in Göteborg and Bangkok, respectively.

At baseline, compared with controls, women assigned to take the pill were younger, had higher blood pressures and had lower levels of HDL cholesterol, total cholesterol and total triglycerides. Pill users were more likely than IUD users to have used a combined oral contraceptive as their last method before entering the study (30 percent vs. 16 percent) and were less likely to have previously used an IUD (nine percent vs. 51 percent, respectively). There were no significant differences in baseline characteristics among women using the four different pill preparations.

At 12 and 48 weeks, there were no significant differences in total cholesterol levels between any of the pill groups and the control group. Differences in total cholesterol levels among women taking the four different pill preparations reached borderline statistical significance only in Göteborg, where women who were taking the pill with less estrogen (250 mcg of levonorgestrel and 30 mcg of ethinyl estradiol) had lower total cholesterol levels than those who were taking the pill with the higher estrogen content (250 mcg of levonorgestrel and 50 mcg of ethinyl estradiol).

Women who took either of the pills containing 250 mcg of levonorgestrel experienced a significant rise in their LDL cholesterol levels when compared with the control group: At 48 weeks, levels of LDL cholesterol among these women were 12–15 percent higher than those measured among IUD users. LDL cholesterol levels among women who took the pill containing 150 mcg of levonorgestrel were also higher than those measured among controls, but the difference was statistically significant only in Göteborg. However, LDL cholesterol levels among women who took pills containing norethisterone acetate did not differ significantly from those among controls in any center.

Overall, as well as in each individual center, women who took oral contraceptives containing 250 mcg of levonorgestrel experienced a significant decrease in HDL cholesterol levels compared with controls: At 48 weeks, the average HDL cholesterol levels were nine percent lower among users of the 250 mcg of levonorgestrel and 50 mcg of ethinyl estradiol pill and 13 percent lower among users of the 250 mcg of levonorgestrel and 30 mcg of ethinyl estradiol preparation when compared with the average level among IUD users. By the end of the study, there were no significant differences in HDL cholesterol levels between the controls and users of pills containing 150 mcg of levonorgestrel or norethisterone acetate.

The ratios of HDL cholesterol to LDL cholesterol and of HDL cholesterol to total cholesterol were significantly lower among women who used either of the pills containing 250 mcg of levonorgestrel and were somewhat lower among those who used the pill containing 150 mcg of levonorgestrel than they were among the controls. Neither the former ratio nor the latter ratio was significantly lower among women who took the pill containing norethisterone acetate than among the controls.

However, triglyceride levels among women who took the pills with norethisterone acetate were significantly higher than those among controls: At 48 weeks, triglyceride levels were 34 percent higher among such women than among IUD users.

Analysis of the effects of each of the four pill preparations on serum lipid levels revealed significant differences between the two progestogens. When pills containing 250 mcg of levonorgestrel and those containing norethisterone acetate are each combined with the same dose of estrogen, those containing levonorgestrel induce a greater increase in levels of LDL cholesterol, a greater decrease in levels of HDL cholesterol and a greater decrease in the HDL/LDL and HDL/total cholesterol ratios. Further, the results show a dose-effec of levonorgestrel on serum lipids: Pills containing 250 mcg of levonorgestrel bring about a greater increase in levels of LDL cholesterol and a greater decrease in both ratios than do those containing 150 mcg o levonorgestrel.

The precise effect of decreases in level of HDL cholesterol and in the HDL/LDL and HDL/total cholesterol ratios require further research. There has been som speculation that these changes might produce an increased risk of myocardial infarction. However, one large study foun that compared with never-users of the pil women who take pills containing levonorgestrel are at a decreased risk of acut myocardial infarction.[2]

The WHO researchers conclude tha before prescribing a combined oral contraceptive, clinicians should consider th clinical status of their patients—in particular, their cardiovascular condition an whether they have hypertriglyceridemi Finally, since most of the effects on lipi levels were dose-related, clinicians shoul always recommend that their patients u the pill preparation containing the lowe effective dose of a particular hormone.

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# Books in Review

## Advice and Consent

**The New Birth-Control Book: A Complete Guide for Women and Men**
*by Howard I. Shapiro, Prentice Hall, New York, 1988, $17.95 (cloth), 319 pp.*

*Reviewed by Judith P. Rooks*

A whole section of my local bookstore is devoted to consumer-oriented volumes on women's health. One shelf has nothing but books on family planning. I wondered if we really needed another book of this type. The answer is a definite "yes" in the case of *The New Birth-Control Book* by Howard I. Shapiro. My copy is now full of underlinings of important and interesting details that other family planning manuals do not cover.

The book, an updated and expanded edition of *The Birth-Control Book* published by the same author in 1977, benefits from Shapiro's extensive experience as an obstetrician-gynecologist in private practice and in an academic medical center. The author respects his patients and believes they are capable of understanding all the information necessary to decide how to control their own fertility. His book substantiates his belief that no medical subject is so complex that it cannot be explained in easy-to-understand terms.

Shapiro writes clearly, in straightforward, fact-filled, but pleasing prose. The tables present information efficiently; the figures illustrate the author's points effectively; and the illustrations are easy to comprehend. Nevertheless, the book requires a literate, numerate and diligent reader. For such a person, *The New Birth-Control Book* provides a comprehensive compendium of detailed technical and practical information on every currently available method of birth control. However, this volume should be of particular benefit to the physicians, nurse-midwives and nurse practitioners who provide direct family planning care.

The book is divided into 11 chapters that cover the reproductive system, all reversible methods of contraception, abortion, male and female sterilization, hysterectomy and birth control methods that may become available in the future. The information is presented as answers to a multitude of questions that the author's patients have posed during his 18 years of medical practice. This is an unusual but effective way to organize the diverse subject matter; however, because information relevant to a single subject may be located in several different places, the book would benefit from even more thorough indexing.

Shapiro's synthesis of research findings on the effectiveness, risks and benefits of each method is current, complete and epidemiologically sound. When the data base is inconclusive, he says so, and goes on to summarize the sometimes conflicting findings of different studies. He explains the confounding factors that contribute to confusing results and acknowledges the importance of some as yet unanswered questions. In addition, the book shows how the information base develops and changes as new studies confirm, refine or refute the results of earlier research.

*The New Birth-Control Book* also provides practical advice on how to use each contraceptive method for maximum safety, effectiveness, comfort, pleasure and convenience. The costs associated with the use of each method are compared. Specific information is provided on all 60 types of oral contraceptives; 28 kinds of condoms; three types of diaphragms; three brands of cervical caps; 15 varieties of vaginal creams, foams, jellies and suppositories; eight hormonal preparations that can be used for "morning after" contraception; several kits for predicting ovulation; the Today™ Sponge; and vaginal contraceptive film.

It is clear from the outset that one of Shapiro's objectives is to counteract widespread misinformation about oral contraceptives; the book jacket announces, "Good News About the Pill." However, all methods are given full and accurate treatment, and no method is unfairly disparaged. Differences in the amount of space devoted to various methods seem to be proportional to the number and complexity of the issues addressed. Although the chapter devoted to the pill is longer than the others, the book's treatment of all reversible contraceptive methods, and of abortion and sterilization, are similarly detailed.

The book does not contain lists of conditions that should be considered as absolute or relative contraindications to the use of various contraceptive methods, but it does provide comprehensive and detailed guidance on who can and who should not use each method. Each problematic condition is discussed separately. Whereas some conditions warrant brief but emphatic advice, others that are usually listed as relative contraindications are treated in great detail.

The chapter on the pill typifies Shapiro's approach, and demonstrates the breadth and depth of the information contained in this book. For example, women who have even a questionable history of deep vein thrombophlebitis are told that they should never take the pill, but those with less serious conditions—such as superficial thrombophlebitis or varicose veins—are given detailed information to help guide their decision as to whether or not to use oral contraceptives.

Shapiro highlights new research results that have caused him to alter his advice to some groups of women. On the evidence

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of recent studies, he now approves of oral contraceptives for black women who suffer from hypertension or sickle-cell disease and for women who have uterine fibroids, although he recommends that they use pills containing a strong progestin and the lowest dose of estrogen. On the other hand, he advises serious athletes not to take the pill, and suggests that women who have type A blood use only those pill preparations that contain the lowest estrogen dose, because such women may be particularly susceptible to blood clots.

The author describes the consistency and weight of the evidence, personal experience or authoritative opinion that underlie his recommendations. For example, there is a thorough discussion of the effects of both the estrogen and progestin components of oral contraceptives on glucose metabolism and insulin resistance. Because progestins may accelerate the metabolic changes that lead to heart disease, diabetics who take insulin are advised against using oral contraceptives, even though their doctors could adjust their insulin dosage to accommodate pill use. Women who have experienced gestational diabetes are told that most endocrinologists think they should not use the pill, but are advised that if they take it their blood sugar should be checked periodically and they must stop using the pill if their tests become abnormal. Women in a variety of circumstances are warned that they are at increased risk of developing diabetes and therefore should have a blood test to screen for diabetes before and six months after they start using the pill. In addition, Shapiro discusses which pill preparations are the worst and which might be the best for women who decide to use oral contraceptives and are at greater than average risk for developing diabetes. He also speaks to some circumstances (such as family history of breast cancer) that women may worry about even though they are not contraindications to pill use.

In the book's preface, Shapiro quotes Betty Friedan's statement that women want " 'birth control options that change according to the changing patterns and needs of their lives.' " [p. xii]. The author concurs, challenging gynecologists to "show the knowledge, flexibility and willingness to help each individual find the best solution to her particular" needs [p. xii]. Recent research showing that 28 percent of married women discontinue their chosen contraceptive method within a year suggests that doing so is not an easy assignment. It requires extensive knowledge to assist women (and men) in finding safe contraceptive methods that they will be willing and able to use and afford over a long period of time; to teach them how to use birth control more safely, effectively and pleasantly; to acknowledge their concerns and answer their questions fully; to guide individuals to new methods when their circumstances change; and to solve both the serious and the merely annoying problems that inevitably arise over many years of contraception.

Dr. Shapiro's book provides the detailed information needed by consumers and especially by family planning practitioners. It is not a family planning primer, with clear but brief directions. It is an advanced course, focusing on the reasons behind the rules.

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Providing Prenatal Care Services . . .

*(Continued from page 130)*

areas and those still in practice can expect only low rates of reimbursement.

Moreover, since many state programs often cover only prenatal care, clinics will continue to have the problem of helping their patients find delivery and hospital services at affordable prices. Although local hospitals often agree to charge the clinics' prenatal care patients a reduced rate or to accept payment in installments, their charges may run between $600 and $1,200, and doctors' delivery fees are often as high. Unless states raise their reimbursement rates for delivery services, some clinics will continue to be unable to cover those costs. Thus far, most family planning clinics with prenatal care programs have not succeeded in finding funds to cover the delivery costs of their prenatal care patients who are not eligible for Medicaid.

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Family Planning

# Perspectives

Volume 21, Number 4, July/August 1989

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**WARNINGS**

> **Cigarette smoking increases the risk of serious cardiovascular side effects from oral contraceptive use. This risk increases with age and with heavy smoking (15 or more cigarettes per day) and is quite marked in women over 35 years of age. Women who use oral contraceptives should be strongly advised not to smoke.**
>
> The use of oral contraceptives is associated with increased risk of several serious conditions including thromboembolism, stroke, myocardial infarction, hepatic adenoma, gallbladder disease, and hypertension. Practitioners prescribing oral contraceptives should be familiar with the following information relating to these risks.

1. *Thromboembolic Disorders and Other Vascular Problems.* An increased risk of thromboembolic and thrombotic disease associated with the use of OCs is well established. Three principal studies in Great Britain and three in the United States have demonstrated an increased risk of fatal and nonfatal venous thromboembolism and stroke, both hemorrhagic and thrombotic. These studies estimate that users of OCs are 4 to 11 times more likely than nonusers to develop these diseases without evident cause. **Cerebrovascular Disorders:** In a collaborative American study of cerebrovascular disorders in women with and without predisposing causes, it was estimated that the risk of hemorrhagic stroke was 2.0 times greater in users than in nonusers and the risk of thrombotic stroke was 4 to 9.5 times greater in users than in nonusers. **Myocardial Infarction:** An increased risk of myocardial infarction associated with the use of OCs has been reported, confirming a previously suspected association. These studies, conducted in the United Kingdom, found, as expected, that the greater the number of underlying risk factors for coronary artery disease (cigarette smoking, hypertension, hypercholesterolemia, obesity, diabetes, history of preeclamptic toxemia), the higher the risk of developing myocardial infarction, regardless of whether the patient was an OC user or not. OCs, however, were found to be a clear additional risk factor. In terms of relative risk, it has been estimated that OC users who do not smoke (smoking is considered a major predisposing condition to myocardial infarction) are about twice as likely to have a fatal myocardial infarction as nonusers who do not smoke. OC users who are also smokers have about a 5 fold increased risk of fatal infarction compared to users who do not smoke, but about a 10- to 12 fold increased risk compared to nonusers who do not smoke. Furthermore, the amount of smoking is also an important factor. In determining the importance of these relative risks, however, the baseline rates for various age groups must be given serious consideration. The importance of other predisposing conditions mentioned above in determining relative and absolute risks has not as yet been quantified; it is quite likely that the same synergistic action exists, but perhaps to a lesser extent. **Risk of Dose:** In an analysis of data derived from several national adverse reaction reporting systems, British investigators concluded that the risk of thromboembolism, including coronary thrombosis, is directly related to the dose of estrogen used in oral contraceptives. Preparations containing 100 mcg or more of estrogen were associated with a higher risk of thromboembolism than those containing 50 to 80 mcg of estrogen. Their analysis did suggest, however, that the quantity of estrogen may not be the sole factor involved. This finding has been confirmed in the United States. Careful epidemiological studies to determine the degree of thromboembolic risk associated with progestogen only OCs have not been performed. Cases of thromboembolic disease have been reported in women using these products, and they should not be presumed to be free of excess risk. **Persistence of Risk:** In confirmation of earlier reports, two studies have suggested that an increased risk may persist for as long as 6 years after discontinuation of oral contraceptive use for cerebrovascular disease and 9 years for myocardial infarction. In addition, a prospective study suggested the persistence of risk for subarachnoid hemorrhage. **Estimate of Excess Mortality from Circulatory Diseases:** A large prospective study carried out in the U.K. estimated the mortality rate per 100,000 women per year from diseases of the circulatory system for users and nonusers of OCs according to age, smoking habits, and duration of use. The overall excess death rate annually from circulatory diseases for OC users was estimated to be 20 per 100,000 (ages 15 to 34 – 5/100,000; ages 35 to 44 – 33/100,000; ages 45 to 49 – 140/100,000), the risk being concentrated in older women, in those with a long duration of use, and in cigarette smokers. It was not possible, however, to examine the interrelationships of age, smoking, and duration of use, nor to compare the effects of continuous versus intermittent use. Although the study showed a 10 fold increase in death due to circulatory diseases in users for 5 or more years, all of these deaths occurred in women 35 or older. Until larger numbers of women under 35 with continuous use for 5 or more years are available, it is not possible to assess the magnitude of the relative risk for this younger age group. The available data from a variety of sources have been analyzed to estimate the risk of death associated with various methods of contraception. The estimates of risk of death for each method include the combined risk of the contraceptive method (eg, thromboembolic and thrombotic disease in the case of oral contraceptives) plus the risk attributable to pregnancy or abortion in the event of method failure. This latter risk varies with the effectiveness of the contraceptive method. The study concluded that the mortality associated with all methods of birth control is low and below that associated with childbirth, with the exception of OCs in women over 40 who smoke. (The rates given for pill only/smokers for each age group are for smokers as a class. For "heavy" smokers [more than 15 cigarettes a day] the rates given would be about double; for "light" smokers [less than 15 cigarettes a day] about 50 percent.) The lowest mortality is associated with the condom or diaphragm backed up by early abortion. The risk of thromboembolic and thrombotic disease associated with OCs increases with age after approximately age 30 and, for myocardial infarction, is further increased by hypertension, hypercholesterolemia, obesity, diabetes, or history of preeclamptic toxemia and especially by cigarette smoking. The physician and the patient should be alert to the earliest manifestations of thromboembolic and thrombotic disorders (eg, thrombophlebitis, pulmonary embolism, cerebrovascular insufficiency, coronary occlusion, retinal thrombosis, and mesenteric thrombosis). Should any of these occur or be suspected, the drug should be discontinued immediately. A four- to six fold increased risk of postsurgery thromboembolic complications has been reported in OC users. If feasible, OCs should be discontinued at least 4 weeks before surgery of a type associated with an increased risk of thromboembolism or prolonged immobilization. 2. *Ocular Lesions.* There have been reports of neuro ocular lesions, such as optic neuritis or retinal thrombosis, associated with the use of OCs. Discontinue OC medication if there is unexplained, sudden or gradual, partial or complete loss of vision; onset of proptosis or diplopia; papilledema; or retinal vascular lesions, and institute appropriate diagnostic and therapeutic measures. 3. *Carcinoma.* Long term continuous administration of either natural or synthetic estrogen in certain animal species increases the frequency of carcinoma of the breast, cervix, vagina, and liver. Certain synthetic progestogens, none currently contained in OCs, have been noted to increase the incidence of mammary nodules, benign and malignant, in dogs. In humans, three case control studies have reported an increased risk of endometrial carcinoma associated with the prolonged use of exogenous estrogen in postmenopausal women. One publication reported on the first 21 cases submitted by physicians to a registry of cases of adenocarcinoma of the endometrium in women under 40 on OCs. Of the cases found in women without predisposing risk factors for adenocarcinoma of the endometrium (eg, irregular bleeding at the time OCs were first given, polycystic ovaries), nearly all occurred in women who had used a sequential OC. These products are no longer marketed. No evidence has been reported suggesting an increased risk of endometrial cancer in users of conventional combination or progestogen-only OCs. Several studies have found no increase in breast cancer in women taking OCs or estrogens. One study, however, while also noting no overall increased risk of breast cancer in women treated with OCs, found an excess risk in the subgroups of OC users with documented benign breast disease. A reduced occurrence of benign breast tumors in users of OCs has been well documented. In summary, there is at present no confirmed evidence from human studies of an increased risk of cancer associated with OCs. Close clinical surveillance of all women taking OCs is, nevertheless, essential. In all cases of undiagnosed persistent or recurrent abnormal vaginal bleeding, appropriate diagnostic measures should be taken to rule out malignancy. Women with a strong family history of breast cancer or who have breast nodules, fibrocystic disease, or abnormal mammograms should be monitored with particular care if they elect to use OCs instead of other methods of contraception. 4. *Hepatic Tumors.* Benign hepatic adenomas have been found to be associated with the use of OCs. One study showed that OC formulations with high hormonal potency were associated with a higher risk than lower potency formulations. Although benign, hepatic adenomas may rupture and may cause death through intra abdominal hemorrhage. This has been reported in short-term as well as long-term users of OCs. Two studies relate risk with duration of use of the contraceptive, the risk being much greater after 4 or more years of OC use. While hepatic adenoma is a rare lesion, it should be considered in women presenting abdominal pain and tenderness, abdominal mass or shock. A few cases of hepatocellular carcinoma have been reported in women taking oral contraceptives. The relationship of these drugs to this type of malignancy is not known at this time. 5. *Use in or Immediately Preceding Pregnancy, Birth Defects in Offspring, and Malignancy in Female Offspring:* The use of female sex hormones – both estrogenic and progestational agents – during early pregnancy may seriously damage the offspring. It has been shown that females exposed *in utero* to diethylstilbestrol, a nonsteroidal estrogen, have an increased risk of developing in later life a form of vaginal or cervical cancer that is ordinarily extremely rare. This risk has been estimated to be of the order of 1 in 1,000 exposures or less. Although there is no evidence at the present time that OCs further enhance the risk of developing this type of malignancy, such patients should be monitored with particular care if they elect to use OCs instead of other methods of contraception. Furthermore, a high percentage of such exposed women (from 30% to 90%) have been found to have epithelial changes of the vagina and cervix. Although these changes are histologically benign, it is not known whether this condition is a precursor of vaginal malignancy. Male children so exposed may develop abnormalities of the urogenital tract. Although similar data are not available with the use of other estrogens, it cannot be presumed that they would not induce similar changes. An increased risk of congenital anomalies, including heart defects and limb defects, has been reported with the use of sex hormones, including OCs, in pregnancy. One case control study has estimated a 4.7 fold increase in risk of limb reduction defects in infants exposed *in utero* to sex hormones (OCs, hormonal withdrawal tests for pregnancy or attempted treatment for threatened abortion). Some of these exposures were very short and involved only a few days of treatment. The data suggest that the risk of limb-reduction defects in exposed fetuses is somewhat less than 1 in 1,000 live births. In the past, female sex hormones have been used during pregnancy in an attempt to treat threatened or habitual abortion. There is considerable evidence that estrogens are ineffective for these indications, and there is no evidence from well controlled studies that progestogens are effective for these uses. There is some evidence that triploidy and possibly other types of polyploidy are increased among abortuses from women who become pregnant soon after ceasing OCs. Embryos with these anomalies are virtually always aborted spontaneously. Whether there is an overall increase in spontaneous abortion of pregnancies conceived soon after stopping OCs is unknown. It is recommended that for any patient who has missed two consecutive periods, pregnancy should be ruled out before continuing the contraceptive regimen. If the patient has not adhered to the prescribed schedule, the possibility of pregnancy should be considered at the time of the first missed period, and further use of OCs should be withheld until pregnancy has been ruled out. If pregnancy is confirmed, the patient should be apprised of the potential risks to the fetus and the advisability of continuation of the pregnancy should be discussed in the light of these risks. It is also recommended that women who discontinue oral contraceptives with the intent of becoming pregnant use an alternate form of contraception for a period of time before attempting to conceive. Many clinicians recommend 3 months although no precise information is available on which to base this recommendation. The administration of progestogen-only or progestogen-estrogen combinations to induce withdrawal bleeding should not be used as a test of pregnancy. 6. *Gallbladder Disease.* Studies report an increased risk of surgically confirmed gallbladder disease in users of OCs and estrogens. In one study, an increased risk appeared after 2 years of use and doubled after 4 or 5 years of use. In one of the other studies, an increased risk was apparent between 6 and 12 months of use. 7. *Carbohydrate and Lipid Metabolic Effects.* A decrease in glucose tolerance has been observed in a significant percentage of patients on OCs. For this reason, prediabetic and diabetic patients should be carefully observed while receiving OCs. An increase in triglycerides and total phospholipids has been observed in patients receiving OCs. The clinical significance of this finding remains to be defined. 8. *Elevated Blood Pressure.* An increase in blood pressure has been reported in patients receiving OCs. In some women, hypertension may occur within a few months of beginning OC use. In the first year of use, the prevalence of women with hypertension is low in users and may be no higher than that of a comparable group of nonusers. The prevalence in users increases, however, with longer exposure, and in the fifth year of use is two and a half to three times the reported prevalence in the first year. Age is also strongly correlated with the development of hypertension in OC users. Women who previously have had hypertension during pregnancy may be more likely to develop elevation of blood pressure when given OCs. Hypertension that develops as a result of taking OCs usually returns to normal after discontinuing the drug. 9. *Headache.* The onset or exacerbation of migraine or development of headache of a new pattern which is recurrent, persistent, or severe, requires discontinuation of OCs and evaluation of the cause. 10. *Bleeding Irregularities.* Breakthrough bleeding, spotting and amenorrhea are frequent reasons for patients discontinuing OCs. In breakthrough bleeding, as in all cases of irregular bleeding from the vagina, nonfunctional causes should be borne in mind. In undiagnosed persistent or recurrent abnormal bleeding from the vagina, adequate diagnostic measures are indicated to rule out pregnancy or malignancy. If pathology has been excluded, time or a change to another formulation may solve the problem. Changing to an OC with a higher estrogen content, while potentially useful in minimizing menstrual irregularity, should be done only if necessary since this may increase the risk of thromboembolic disease. Women with a past history of oligomenorrhea or secondary amenorrhea or young women without regular cycles may have a tendency to remain anovulatory or to become amenorrheic after discontinuation of OCs. Women with these preexisting problems should be advised of this possibility and encouraged to use other contraceptive methods. Post use anovulation, possibly prolonged, may also occur in women without previous irregularities. 11. *Ectopic Pregnancy.* Ectopic as well as intrauterine pregnancy may occur in contraceptive failures. However, in progestogen-only OC failures, the ratio of ectopic to intrauterine pregnancies is higher than in women who are not receiving OCs, since the drugs are more effective in preventing intrauterine than ectopic pregnancies. 12. *Breast Feeding.* OCs given in the postpartum period may interfere with lactation. There may be a decrease in the quantity and quality of the breast milk. Furthermore, a small fraction of the hormonal agents in OCs has been identified in the milk of mothers receiving these drugs. The effects, if any, on the breast fed child have not been determined. If feasible, the use of OCs should be deferred until the infant has been weaned. **PRECAUTIONS: General:** 1. A complete medical and family history should be taken prior to the initiation of OCs. The pretreatment and periodic physical examinations should include special reference to blood pressure, breasts, abdomen and pelvic organs, including Papanicolaou smear and relevant laboratory tests. As a general rule, OCs should not be prescribed for longer than 1 year without another physical examination being performed. 2. Under the influence of estrogen-progestogen preparations preexisting uterine leiomyomata may increase in size. 3. Patients with a history of psychic depression should be carefully observed and the drug discontinued if depression recurs to a serious degree. Patients becoming significantly depressed while taking OCs should stop the medication and use an alternate method of contraception in an attempt to determine whether the symptom is drug related. 4. OCs may cause some degree of fluid retention. They should be prescribed with caution, and only with careful monitoring, in patients with conditions which might be aggravated by fluid retention, such as convulsive disorders, migraine syndrome, asthma, or cardiac or renal insufficiency. 5. Patients with a past history of jaundice during pregnancy have an increased risk of recurrence of jaundice while receiving OC therapy. If jaundice develops in any patient receiving such drugs, the medication should be discontinued. 6. Steroid hormones may be poorly metabolized in patients with impaired liver function and should be administered with caution in such patients. 7. OC users may have disturbances in normal tryptophan metabolism which may result in a relative pyridoxine deficiency. The clinical significance of this is yet to be determined. 8. Serum folate levels may be depressed by OC therapy. Since the pregnant woman is predisposed to the development of folate deficiency and the incidence of folate deficiency increases with increasing gestation, it is possible that if a woman becomes pregnant shortly after stopping OCs, she may have a greater chance of developing folate deficiency and complications attributed to this deficiency. 9. The pathologist should be advised of OC therapy when relevant specimens are submitted. 10. Certain endocrine and liver function tests and blood components may be affected by estrogen-containing OCs: a. Increased sulfobromophthalein retention. b. Increased prothrombin and factors VII, VIII, IX, and X; decreased antithrombin 3; increased norepinephrine-induced platelet aggregability. c. Increased thyroid binding globulin (TBG) leading to increased circulating total thyroid hormone, as measured by protein bound iodine (PBI), T4 by column, or T4 by radioimmunoassay. Free T3 resin uptake is decreased, reflecting the elevated TBG; free T4 concentration is unaltered. d. Decreased pregnanediol excretion. e. Reduced response to metyrapone test. **INFORMATION FOR THE PATIENT:** See Patient Labeling. **DRUG INTERACTIONS:** Reduced efficacy and increased incidence of breakthrough bleeding have been associated with concomitant use of rifampin. A similar association has been suggested with barbiturates, phenylbutazone, phenytoin sodium, tetracycline, and ampicillin. **CARCINOGENESIS, PREGNANCY, NURSING MOTHERS:** See Contraindications and Warnings sections. **ADVERSE REACTIONS:** An increased risk of the following serious adverse reactions has been associated with the use of OCs (see Warnings): Thrombophlebitis; pulmonary embolism; coronary thrombosis; cerebral thrombosis; cerebral hemorrhage; hypertension; gallbladder disease; benign hepatomas; congenital anomalies. There is evidence of an association between the following conditions and the use of OCs, although additional confirmatory studies are needed: Mesenteric thrombosis; neuro-ocular lesions, eg, retinal thrombosis and optic neuritis. The following adverse reactions have been reported in patients receiving OCs and are believed to be drug related: Nausea and/or vomiting, usually the most common adverse reactions, occur in approximately 10 percent or less of patients during the first cycle. Other reactions, as a general rule, are seen much less frequently or only occasionally: Gastrointestinal symptoms (such as abdominal cramps and bloating); breakthrough bleeding; spotting; change in menstrual flow; dysmenorrhea; amenorrhea during and after treatment; temporary infertility after discontinuance of treatment; edema; chloasma or melasma which may persist; breast changes: tenderness, enlargement and secretion; change in weight (increase or decrease); change in cervical erosion and cervical secretion; possible diminution in lactation when given immediately postpartum; cholestatic jaundice; migraine; increase in size of uterine leiomyomata; rash (allergic); mental depression; reduced tolerance to carbohydrates; vaginal candidiasis; change in corneal curvature (steepening); intolerance to contact lenses. The following adverse reactions have been reported in users of OCs, and the association has been neither confirmed nor refuted: Premenstrual-like syndrome; cataracts; changes in libido; chorea; changes in appetite; cystitis-like syndrome; headache; nervousness; dizziness; hirsutism; loss of scalp hair; erythema multiforme; erythema nodosum; hemorrhagic eruption; vaginitis; porphyria; hemolytic uremic syndrome. **ACUTE OVERDOSE:** Serious ill effects have not been reported following acute ingestion of large doses of OCs by young children. Overdosage may cause nausea, and withdrawal bleeding may occur in females. **HOW SUPPLIED:** Loestrin **21** 1/20 is available in dispensers each containing 21 tablets. Each tablet contains 1 mg of norethindrone acetate and 20 mcg of ethinyl estradiol. Available in packages of five dispensers. Loestrin **Fe** 1/20 is available in dispensers each containing 21 white tablets and 7 brown tablets. Each white tablet contains 1 mg of norethindrone acetate and 20 mcg of ethinyl estradiol. Each brown tablet contains 75 mg ferrous fumarate. Available in packages of five dispensers. Loestrin **21** 1.5/30 is available in dispensers each containing 21 tablets. Each tablet contains 1.5 mg of norethindrone acetate and 30 mcg of ethinyl estradiol. Available in packages of five dispensers. Loestrin **Fe** 1.5/30 is available in dispensers each containing 21 green tablets and 7 brown tablets. Each green tablet contains 1.5 mg of norethindrone acetate and 30 mcg of ethinyl estradiol. Each brown tablet contains 75 mg ferrous fumarate. Available in packages of five dispensers.

**Caution** – Federal law prohibits dispensing without prescription.

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# Perspectives

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# Editorial

## The Webster Decision: A Giant Step Backwards

*By Jeannie I. Rosoff*

With few exceptions, the various justices' opinions in *Webster* v. *Reproductive Health Services* (excerpted in the Document section, page 184) failed to convey the personal emotions, the social and political conflicts or even much of the reasoning that led the Supreme Court to take a giant step backwards in cancelling, or inviting the cancellation of, individual and civic rights once believed securely established.

In declaring, in principle, that the government has a compelling interest in fetal life throughout a woman's pregnancy, not just after the fetus has achieved viability, as was the case under *Roe* v. *Wade*, a plurality of the Court rejected the trimester framework under which abortion had been legal for 16 years. Furthermore, by approving the requirement of specific tests to determine the viability of fetuses at only 20 weeks' gestation, when no fetuses are viable or can be made viable by any foreseeable new scientific techniques, the Court put this principle into practice. It did what it had previously and scrupulously avoided: dictate the practice of medicine.

Having long before agreed that the states and the federal government can, if they choose, prohibit the use of public funds for abortion, the Court went much further in *Webster*. By agreeing with Missouri that Truman Medical Center is "publicly owned" because it resides on leased public land, the Court implicitly declared that any connection with government, however small or indirect, can be used to prohibit a private hospital from providing abortions. Under this construction, it is a rare institution, indeed, that could avoid having government restrictions placed on abortion services.

At the moment, the practical impact of the decision is limited to the state of Missouri. But, perhaps the most important aspect of the *Webster* decision is not what the court actually did or said, but what it did not say. If the previous trimester system is out, what other scheme is to replace it. If the state has found a "compelling" interest in fetal life through all stages of pregnancy, have women lost any "compelling" interests? If states can regulate abortion, are there boundaries to such regulations?

Except in the case of Justice Scalia, it is unclear where members of the new plurality intend to go from here. Do they wait for the arrival of an additional member of the Court to embolden them to sweep away all constitutional rights to abortion? Are they, in *Webster*, simply avoiding an outright reversal, preferring to proceed more gradually towards the same goal? Or, in spite of their obvious hostility to *Roe*, are they unable to come up with an alternative construction, hoping instead to devise an ad hoc formula as they go about reviewing the cases the states are bound to send, cases that the *Webster* decision is actually inviting?

The answers to these questions may be forthcoming next year, for the Court has already agreed to review three additional abortion cases. Two deal with the constitutionality of provisions requiring prior notification of one or both parents for a minor's abortion. The third is a statute that imposes unusually onerous clinic licensing requirements and seeks to regulate abortions by private physicians, when no similar regulations exist for other office surgery of similarly low risk. The Court, in its next session, could acquiesce to all these provisions and also rescind its previously required "judicial bypass" requirement, which allows minors unable or unwilling to secure parental authorization to seek relief from a court. It could also make further pronouncements on the abortion "right."

In the meantime, the immediate consequences of *Webster* on public attitudes, public opinion and the political process are already being felt. Polls show substantial and widespread disapproval of the decision, and some indicate that as much as 20 percent of the public believe that abortion has already been made illegal. The Governor of Florida has called for a special session of the state legislature this fall to consider restrictions on abortion, and the abortion issue has jumped to the forefront of this year's two gubernatorial campaigns in Virginia and New Jersey. Political analysts speculate on the impact of the abortion issue on the 1990 elections and on the resultant partisan composition of state legislatures making redistricting decisions necessitated by the decennial U.S. census, decisions that could affect political futures and political decisions for the rest of the decade.

Chaos can be expected as state legislatures convene early next year and attempt to fashion new abortion laws without any guidelines from the Supreme Court except that some, many, most or virtually all state restrictions are now welcome. Since the Court is unlikely to decide the cases on next session's agenda until after most legislatures will have adjourned, the legislatures will essentially be flying blind—as will the lower courts in which most new restrictions are likely be challenged.

It is easy to imagine the confusion into which both the women seeking abortions and the providers of services will be plunged. Not all states and not all women and providers will be similarly affected, of course. Some states, mostly in the West, the Northeast and the Middle Atlantic regions, will probably not change their laws significantly. These are the states where abortion laws had been liberalized prior to the 1973 *Roe* decision or that have chosen, or been ordered under their state constitutions, to pay for abortions to medi-

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cally indigent women. At the other end of the spectrum, there will be a group of states, mainly those where Fundamentalist or Mormon influence is strong, that will decide to bar all abortions, except those necessary to save the woman's life, or perhaps in cases of rape and incest.

Most of the other states will try to fashion their own set of regulations. In addition to limits on the number of weeks at which abortion may be permitted, a host of other conditions and restrictions can be expected, given the experience immediately after the *Roe* decision, when many states enacted statutes testing issues not explicitly settled in that decision. The most probable restrictions include statutes to mandate not only parental but also spousal or partner's consent to the abortion decision, to require waiting periods and elaborate "informed consent" procedures and to impose burdensome or prohibitive licensing or zoning requirements on clinics. Moreover, some states may also require, in spite of the catch-22 aspect of the situation, that most, if not all, abortions be performed in hospitals at the very time that the Supreme Court is allowing states to restrict hospital abortions.

If chaos is in sight, can relief be anticipated? Not in the immediate future.

The *Webster* decision and future actions of the Supreme Court represent yet another phase in the ongoing interaction of our three branches of government over the thorny issue of abortion. It is not necessary to go back to the dim historical past to recall that the 1973 decisions were the logical extension of a recognition by the Court that reproductive choices should be accepted as fundamental rights protected under the Constitution. Starting with the rejection of state laws that allowed for the compulsory sterilization of certain individuals and continuing through the invalidation of laws prohibiting the use of birth control, first by married couples, then by the unmarried as well, the Court had set the stage for the *Roe* decision. In the meantime, beginning with that of Colorado in 1967, state legislatures had begun to legalize abortion under more or less restrictive circumstances and, in 1970, the state of New York had enacted a bill with provisions quite similar to what was to become the law of the land three years later. Large numbers of women had begun to travel to states in which legal abortion was available, and in 1972, some 600,000 legal abortions were reported nationwide. The Supreme Court's 1973 decisions preempted this slow, tortuous legislative process and, as a result, were viewed by many people as sheer usurpation of the power of the state legislatures.

Following *Roe*, another legislature—in this case, Congress—spurred by powerful political opposition to the *Roe* decision, stepped in. For more than 10 years, proposals for constitutional amendments were filed, were made the subject of Congressional hearings, were bitterly fought over and were finally decisively defeated. In frustration, opponents of legal abortion turned to the executive branch to achieve their aims. Elected with the enthusiastic support of the most conservative elements of the Republican Party, Christian Fundamentalist groups and the right-to-life movement, President Reagan vowed to change the composition of the Supreme Court. He evidently succeeded. Both the Reagan and the Bush administrations petitioned the Court to reverse *Roe*. While the *Roe* decision so far stands, it does so now more in name than in reality.

The ball has now been thrown back to the states. As mentioned earlier, they are likely to vary greatly in their responses, and it is too early to tell how the new, prochoice militancy aroused by the *Webster* decision will affect the political process. Legislators—previously concerned only with appeasing their antiabortion constituents and, in many cases, reasonably secure in their beliefs that any truly harmful antichoice measures would be rejected by the courts—will now face different realities.

It is highly probable that we will return to a modified pre-1973 situation, in which there are great disparities among areas of the country in the availability of legal abortion. These disparities exist even now, since abortion services are primarily available in large urban areas, but they will be magnified, particularly for the poor and the young, and will become more glaringly cruel, unjust, socially harmful and, eventually, intolerable. Congress may be forced to step in. Whether by statute, or perhaps in the even more distant future, by constitutional amendment, it may be inevitable that Congress will give back what the Supreme Court has just taken away: a national policy on abortion and a woman's fundamental right to choose.

# UPDATE

### California FP Funds Slashed

On July 7, 1989, California governor George Deukmejian used his line-item veto power to cut state funding for family planning services by 67 percent, from $36 million to $12 million.[1] The impact on providers was immediate, because California's fiscal year begins on July 1. The act affected public and private clinics, hospitals, health maintenance organizations and rural health clinics. Providers in Los Angeles alone face a sudden loss of $7 million in state funds. The Los Angeles Regional Family Planning Council estimates that at least 35 of 82 clinics in the area may be closed, and that about 80,000 fewer patients will be served. Deukmejian justified his veto by charging that state-funded family planning programs are ineffective; however, important services such as cancer screening, prenatal care and sexually transmitted disease testing will also be affected by the cuts. Although the legislature will be asked to restore funding upon its return from recess in September, funding supporters doubt that that can be accomplished.

[1] S. Michaels, Los Angeles Regional Family Planning Council, personal communication, Aug. 17, 1989.

### Premarital AIDS-Testing Fails

Mandatory premarital testing for the human immunodeficiency virus (HIV) has proved to be both very costly and not cost-effective for the state of Illinois, according to a study conducted by the Illinois Department of Public Health.[1] During the first six months of 1988, when the law was first implemented, only eight persons were identified as seropositive among 70,846 applicants for marriage licenses. The overall cost of the HIV tests was estimated at $2.5 million—based on an average charge of $35 per person, which was paid by the applicants themselves. This $5 million estimated annual cost is nearly 1.5 times the total allocated in the state budget for AIDS surveillance, education and counseling. Furthermore, since only eight positive results were found, the cost of identifying each seropositive individual through premarital testing represents $312,000, compared with less than $2,000 through the current state program. During the same six-month period, the state is estimated to have lost revenues of $77,250 because about 10,300 Illinois residents obtained their marriage licenses in neighboring states, presumably to avoid the HIV testing requirement.

In an editorial, New York City Health Commissioner Stephen Joseph claims that more studies like this one are needed to direct policy decisions regarding AIDS.[2] He predicts that as new methods of treatment are developed, or when means are found to prevent seroconversion or to reduce infectiousness, the public health approach to HIV infection will become more like classic tuberculosis control, with confidential registration of seropositive individuals, more aggressive contact tracing, and routine counseling and testing in high-prevalence areas.

[1] B. J. Turnock and C. J. Kelly, "Mandatory Premarital Testing for Human Immunodeficiency Virus—The Illinois Experience," *Journal of the American Medical Association*, **261:**3415, 1989.

[2] S. C. Joseph, "Premarital AIDS Testing: Public Policy Abandoned at the Altar," *Journal of the American Medical Association*, **261:**3456, 1989.

### Douching Popular Among Teenagers

Vaginal douching appears to be a common practice among teenagers visiting family planning clinics.[1] Sixty-nine percent of 142 teenagers surveyed at a Houston Planned Parenthood clinic during the summer of 1986 reported having douched, and 21 percent had douched within two days of their clinic visit. The practice was more common among blacks (81 percent) than among Hispanics (49 percent) or whites (46 percent). Overall, 59 percent said they had learned about douching from their mothers, with blacks twice as likely as Hispanics or whites to say so. The mean age at which the teenagers had begun douching was nearly identical to their mean age at first intercourse. The reason the teenagers gave most often for douching was "to feel clean."

There was no relationship between douching and past or present chlamydial or gonorrheal infection. However, many clinicians believe that frequent douching can cause vaginal yeast infections. It may also lower absolute numbers of bacteria, the investigators warn, which could hamper laboratory tests for trichomoniasis and bacterial vaginosis. Other potential risks associated with douching include ectopic pregnancy, pelvic inflammatory disease, chemical peritonitis and air emboli. The researchers conclude that clinicians should discourage the practice and suggest that more studies are needed to assess the overall popularity of douching.

[1] M. R. Chacko, "Vaginal Douching in Teenagers Attending a Family Planning Clinic," *Journal of Adolescent Health Care*, **10:**217, 1989.

### Antifertility Drug Kills AIDS Virus

Gossypol, an extract from cottonseed, studied for years as a potential contraceptive for men, may be effective in thwarting sexual transmission of HIV, either by reducing sperm production in males or by killing the virus on contact.[1] Taken orally, gossypol has been found to reduce male fertility by decreasing sperm production and motility. Previous research had suggested that since the AIDS virus may attach to sperm cells, gossypol's spermicidal effect may also reduce transmission of HIV. However, investigators now have found that in the laboratory, gossypol kills the AIDS virus itself. Used in a concentration of 100 µM, gossypol completely inactivated HIV in cell-free preparations, and while lower concentrations did not completely inhibit HIV, they did slow its activity substantially. Further research is underway to determine if gossypol has the same effect in vivo, when taken orally by HIV-infected men (which will depend on its concentration in seminal fluid). The investigators also suggest that vaginal preparations containing gossypol might be used to protect women from HIV infection.

1. B. Polsky et al., "Inactivation of Human Immunodeficiency Virus in Vitro by Gossypol," *Contraception*, **39**:579, 1989.

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### AIDS Funding: Prevention vs. Cure

From 1982 through 1989, the federal government will have spent $5.5 billion on AIDS-related programs, including research, education, medical care and cash assistance.[1] The U.S. Public Health Service is responsible for nearly 60 percent of this spending total, most of which has gone toward research into the disease and development of drugs for treating it. The total amount to be spent on AIDS research, education and prevention in 1989 ($1.3 billion) is similar to that for other major diseases, such as cancer and heart disease, but current expenditures for research are double those for education and prevention. Considering that AIDS is an almost entirely preventable disease, researchers argue that increased funding is needed for public education and drug abuse treatment.[2]

Facilities that treat intravenous (IV) drug users are in particularly short supply. New York, for example, has an estimated 200,000 IV drug users and an HIV-positive seroprevalence rate in this group of 40–70 percent, but it has facilities to treat only about 38,000 of them. A 1988 General Accounting Office report calls for an additional $400 million to be spent by the Public Health Service in 1989, mainly for the treatment of drug abuse.

AIDS is also an impoverishing disease: About 40 percent of AIDS patients have their care paid for by Medicaid, indicating that many have exhausted their own financial resources. (Federally financed Medicaid costs for AIDS to date are about $1.26 billion.) Only about one percent of persons with AIDS qualify to receive Medicare, because many of them die before the end of the 24-month waiting period. Finally, although total federal spending for AIDS will reach $2.2 billion in 1989 and an estimated $4.3 billion in 1992, the latter figure represents less than two percent of projected total federal 1992 health costs.

1. W. Winkenwerder, A. R. Kessler and R. M. Stolec, "Federal Spending for Illness Caused by the Human Immunodeficiency Virus," *New England Journal of Medicine*, **320**:1598, 1989.

2. Ibid., and D. E. Rogers, "Federal Spending on AIDS—How Much is Enough?" *New England Journal of Medicine*, **320**:1623, 1989.

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### Dissolvable Implant Tested

Early tests of Capronor, a biodegradable contraceptive implant, indicate that the method works for about a year, delivering a steady dose of levonorgestrel from a small rod placed in the user's arm. In a year-long study of 48 healthy, sexually active women of reproductive age, 16 were given a rod 2.5 cm long and 32 received a rod 4.0 cm long. Serum levels of progesterone obtained from 10 women in each group showed that the smaller rod consistently failed to prevent ovulation, while the larger rod suppressed ovulation nearly 75 percent of the time. Most of the women who ovulated had regular bleeding patterns, while a majority of the others bled irregularly. There was one pregnancy among women using the smaller rod and two among women given the larger rod. The researchers assume that the women who did ovulate were protected from pregnancy by hormone-induced changes in the endometrium and cervical mucus.

After eight months of use, levels of serum levonorgestrel were so low in the group with the 2.5 cm rods that insertion of a second rod was required. The researchers therefore concluded that the 4.0 cm size may be the minimal functional length. A second trial of Capronor is planned for early 1990. One of the potential advantages of Capronor over NORPLANT® (now being used in many countries) is that it will dissolve rather than requiring surgical removal.

1. P. D. Darney et al., "Clinical Evaluation of the Capro-nor Contraceptive Implant: Preliminary Report," *American Journal of Obstetrics and Gynecology*, **160**:1292, 1989.

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### Microspheres Pass Early Test

A new type of injectable contraceptive consisting of norethindrone microspheres is now one step closer to being ready for use. A Phase II multicenter study comparing 65 mg and 100 mg doses of a slow-release, injectable hormonal contraceptive active for 90 days has determined that 65 mg is the minimal effective dose, and that the 100 mg dose should be as reliable as the most effective injectable or oral contraceptive available.[1] The two doses tested were comparable in terms of type of side effects the women experienced, the women's patterns of vaginal bleeding, and laboratory measures of the women's hemoglobin levels, liver function and other metabolic indicators. Over the course of the six-month randomized trials, no pregnancies were reported in the 100 mg group, compared with one in the group using the 65 mg injection. Because of the limited experience with the latter dose, however, further testing will be required before its associated pregnancy rate of 2.6 per 100 woman-years can be accepted with confidence. The researchers expect that the norethindrone microspheres will be submitted to the U.S. Food and Drug Administration for approval once the ongoing animal studies and Phase III clinical trials are completed.

1. G. S. Grubb et al., "A Comparative Evaluation of the Safety and Contraceptive Effectiveness of 65 mg and 100 mg of 90-day Norethindrone (NET) Injectable Microspheres: A Multicenter Study," *Fertility and Sterility*, **51**:803, 1989.

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### Reducing Postabortion Infections

Treatment with antibiotics at the time of an abortion for women with positive cultures for chlamydia can greatly reduce their risk of complications after the procedure.[1] At a Swedish hospital, routine testing of abortion patients for chlamydial and gonorrheal infection one week before the procedure revealed 69 women with positive cultures for chlamydia; 70 percent were younger than 25, none showed symptoms of infection and none had had pelvic inflammatory disease. All were treated with either doxycycline or erythromycin for 10 days, beginning 0–3 days before the abortion, and some were given intravenous antibiotics preoperatively. Only seven percent of the patients developed endometritis within one month of the abortion, as did seven percent of a group of 138 controls who had had negative cultures for chlamydia. In an earlier study of women with positive cultures who did not receive antibiotics, 38 percent experienced postabortion complications such as endometritis or salpingitis, compared with just six percent among women with negative chlamydia cultures. Based on these results, the investigators assert that screening for chlamydia is a necessary step for all women seeking an abortion.

1. S. Osser and K. Persson, "Postabortal Infectious Mor-bidity After Antibiotic Treatment of Chlamydia-Positive Patients," *Sexually Transmitted Diseases*, **16**:84, 1989.

# Sexual Activity, Condom Use and AIDS Awareness Among Adolescent Males

*By Freya L. Sonenstein, Joseph H. Pleck and Leighton C. Ku*

**Summary**

New data from the 1988 National Survey of Adolescent Males indicate that 60 percent of never-married young men ages 15–19 are sexually active. Among 17–19-year-old males living in metropolitan areas, the rate of sexual activity reported in 1988 was 15 percent higher than that reported in 1979. This increase encompasses a rise of 23 percent among black males and 13 percent among nonblack males.

Slightly more than half of the sexually active males in the 1988 survey reported that they had used a condom the last time they had had intercourse. Among both black and nonblack youths aged 17–19 living in metropolitan areas, rates of reported condom use at last intercourse more than doubled between 1979 and 1988. Conversely, reported reliance on ineffective methods of contraception or use of no method at last intercourse was 60 percent lower. When first intercourse occurred within two years of the 1988 survey, the odds of using a condom were increased by 110 percent over the odds when intercourse occurred between 1975 and 1982, after controlling for the effects of age at first intercourse, race and ethnicity.

The young men in the sample were very knowledgeable about how the human immunodeficiency virus is transmitted, and over three-quarters of the sample did not dismiss the disease as uncommon, nor did they think that using condoms to prevent the spread of AIDS was too much trouble. The rates of condom use were significantly lower than average, however, among young men who had ever used drugs intravenously or whose partners had done so, young men who had ever had sex with a prostitute and those who had had five sexual partners or more in the past year.

**The levels of condom use reported in 1988 were suprisingly high compared with 1979 levels. Among 17–19-year-olds living in metropolitan areas, condom use at last intercourse more than doubled—from 21 percent to 58 percent.**

## Background

By the end of May 1989, a total of 97,193 individuals in the United States were reported to have AIDS, and between 1.0 and 1.5 million people were estimated to be infected with the human immunodeficiency virus (HIV).[1] To curb the spread of the deadly infection, Americans have been advised to be selective and exclusive about their sexual partners and to use condoms for protection during sex; drug users have been cautioned to avoid sharing syringes.

Teenagers may be an especially vulnerable population because in the past they have had high reported rates of unprotected sexual intercourse and experimentation with drugs. The number of AIDS cases diagnosed among teenagers is currently small, however—less than one percent of all cases.[2] Similarly, reported HIV seroprevalence rates in this age-group are fairly low—one per 1,000 among 17–19-year-old military recruits and two per 1,000 among college students.[3]

AIDS prevalence rates are believed to be much higher among individuals aged 20–29, since 20 percent of all persons diagnosed with AIDS by September 1988 were in their 20s.[4] Because the average length of time between infection and the onset of AIDS or related symptoms is 8–10 years, many of these infections are believed to have occurred during the person's teenage years. Moreover, rates of other sexually transmitted diseases are higher among sexually active teenagers than they are among adults.[5] Thus, even though the incidence of diagnosed AIDS is low among teenagers, the teenage population has been identified by the U.S. Surgeon General as especially vulnerable.[6] Because teenagers are just beginning to establish their patterns of sexual behavior, they represent an especially appropriate group to target for preventive efforts.

Among some groups, behavior may be changing as a result of the AIDS epidemic. For example, among homosexual and bisexual males, the number of sexual partners and the frequency of anal intercourse appear to have decreased since 1983, and the use of condoms and spermicides appears to have increased. Among intravenous drug users, the sharing of needles appears to have decreased, and needle sterilization has increased.[7]

The evidence is less clear about what has happened to high-risk behaviors among heterosexuals, especially teenagers. Several studies have found that most teenagers know that AIDS can be contracted through sexual intercourse and intravenous drug use, although they may also incorrectly believe that it can be contracted from giving blood, being bitten by a mosquito or using a public toilet.[8] A study in San Francisco reports no changes between 1984 and 1986 in teenagers' use of condoms in the past month or in intended use

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of condoms.[9] Other more recent research in Massachusetts indicates that teenagers in two statewide samples of 16–19-year-olds used drugs less and condoms more in 1988 than in 1986; rates of sexual activity were also somewhat higher in 1988.[10] Studies showing that the general population, as well as teenagers, have changed their behavior as a result of AIDS[11] are supported by reports that condom sales increased between 1986 and 1987.[12]

All of these indicators suggest that the sexual and contraceptive behavior of U.S. teenagers may be changing as concern about AIDS increases. Using new data on current levels of sexual activity and condom use collected in the 1988 National Survey of Adolescent Males (NSAM), we examine current sexual behavior and condom use among young males and compare the results with data from 1979.

The NSAM, conducted by the Institute for Survey Research at Temple University, utilized an area probability sampling frame based on 1980 census data to draw a sample representative of the noninstitutionalized,* never-married male population aged 15–19 and living in the contiguous United States. (The sample was stratified to overrepresent black and Hispanic respondents.) In-person interviews lasting about one hour were completed between April and November 1988 with 74 percent of the sample—676 young black men, 386 Hispanic men, 755 whites and 63 respondents of other racial and ethnic groups—for a total of 1,880 interviews.† A short self-administered questionnaire was also completed at the end of the interview. The percentages used throughout this article were calculated using weighted data.‡

## Sexual Activity

In 1988, 60 percent of young men ages 15–19 responded affirmatively to a question asking whether they had "ever had sexual intercourse with a girl—sometimes . . . called 'making love,' 'having sex,' or 'going all the way?'" Table 1 shows the distribution of responses by age and racial or ethnic group. Levels of sexual activity increased significantly at each successive year of age. While only one-third of the 15-year-old males had experienced sexual intercourse, one-half of 16-year-olds and close to two-thirds of 17-year-olds were sexually experienced. At age 19, 86 percent of the young men in the sample reported that they had had sexual intercourse.

Levels of sexual activity also varied significantly by racial and ethnic group. While 81 percent of black men ages 15–19 reported having had sexual intercourse, the proportions were lower among Hispanics (60 percent) and whites (57 percent). Among the youngest age-groups, the differential rates of sexual activity by race were even more marked. Whereas over two-thirds of black 15-year-olds reported that they had had intercourse, only one-third of Hispanics and one-quarter of whites of the same age were sexually experienced. In every age-group except the 19-year-olds, rates of sexual activity varied significantly by race or ethnicity.

The high rates of sexual activity reported by adolescent males in other surveys have led some analysts to hypothesize that young men may overreport their sexual activity.[13] To assess the reliability of our data, we used two different approaches to measuring rates of sexual experience. The interviewers posed the question about sexual activity midway through the interview. In addition, the self-administered battery of questions completed by the respondents at the end of the interview posed the question again in a different format: Young men were asked if they had ever engaged in a series of increasingly intimate acts with a girl. Embedded in this series were two questions about vaginal penetration with and without ejaculation and with or without a condom on the last occasion this happened. The consistency of responses to the self-administered and the interviewer-administered questions was very high (87 percent, with a kappa statistic of 0.802).§ The data also appear to have external validity. In 1986, a national Planned Parenthood poll found that 35 percent of 15-year-old males, 49 percent of 16-year-olds and 61 percent of 17-year-olds had experienced sexual intercourse.[14] These proportions are remarkably similar to the NSAM findings.

Trend information about the sexual behavior of adolescent males is rare. The NSAM was designed to remedy this problem by replicating items from one of the few other national surveys of teenage male sexual behavior, the 1979 National Survey of Young Men.[15] The 1979 data provide benchmark information about sexual activity and contraceptive use among young men that we can use to assess whether changes have occurred over time in these behaviors.

Comparisons of data from different surveys can be problematic, because observed differences may be the result of survey design rather than of actual changes in behavior.[16] Some of the potential design differences between the NSAM and the 1979 National Survey of Young Men have been controlled by having the same organization and the same director that implemented the 1979 survey implement the NSAM. However, the sample for the earlier study included only metropolitan areas, and the young men interviewed were ages 17–21. Therefore, comparisons between 1988 and 1979 can only be made for 17–19-year-old males living in metropolitan areas and are restricted to the categories of black and nonblack, the only racial groupings in the public use tape for the 1979 survey. A further difference between the two surveys is that the question about "ever having had sexual intercourse with a girl" was asked in a self-administered section of the 1979 survey, whereas it was asked by an interviewer in 1988. Because of the potential effects of these and possibly other design differences, comparisons between 1979 and 1988 data should be interpreted cautiously.

**Table 1. Percentages of never-married males aged 15–19 who have had sexual intercourse, by age, according to race/ethnicity, United States, 1988**

| Age | All races (N= 1,880) | Black (N= 676) | White (N= 752) | Hispanic (N= 385) |
|---|---|---|---|---|
| **15–19** | **60.4** | **80.6** | **56.8** | **59.7** |
| 15 | 32.6 | 68.6 | 25.6 | 32.8 |
| 16 | 49.9 | 70.1 | 46.7 | 47.2 |
| 17 | 65.6 | 89.6 | 59.1 | 87.6 |
| 18 | 71.6 | 82.5 | 71.4 | 52.8 |
| 19 | 85.7 | 95.9 | 84.5 | 82.2 |

Notes: In Tables 1, 3 and 5, "All races" includes blacks, whites, Hispanics and others. For each age except 19 years, racial differences were significant at $p<0.001$; for the "All races" group, age differences were significant at $p<0.001$ (chi-square).

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*Young men in college dormitories, military barracks, prisons or other group quarters were not part of the sampling frame.

†Of the 23,825 households identified for screening, 21,078 were occupied housing units. The screening rate was 94 percent. Eligible households numbered 2,743. In six percent of these, parents refused to allow interviews with young men under age 19; in 13 percent, the eligible respondent refused to participate in the survey; and in six percent, the interview was not completed by the end of the survey's field period.

‡Weights were calculated as the product of the basic sampling weight, a screening nonresponse rate, an interview nonresponse rate, and a poststratification adjustment that aligned the sample distribution with the March 1987 Current Population Survey.

§Consistency of responses was compared across the following three categories: no sexual experience, condom use at last intercourse and no condom use at last intercourse. Answers to the self-administered questions about coitus with and without ejaculation were combined to compare with answers to the interviewer's question about ever having had sexual intercourse.

**Table 2. Percentages of never-married metropolitan-area males aged 17–19 who have had sexual intercourse, by age, according to race, 1979 and 1988**

| Age | 1979 | | | 1988 | | |
|---|---|---|---|---|---|---|
| | All (N=609) | Black (N=257) | Nonblack (N=352) | All (N=742) | Black (N=288) | Nonblack (N=452) |
| **17–19** | **65.7** | **71.1** | **64.5** | **75.5*** | **87.7*** | **73.0†** |
| 17 | 55.7 | 60.3 | 54.5 | 71.9* | 89.7* | 68.0‡ |
| 18 | 66.0 | 79.8 | 63.6 | 70.6 | 80.1 | 68.7 |
| 19 | 77.5 | 79.9 | 77.1 | 87.8‡ | 97.8* | 86.0 |

*1979 levels of sexual activity differed significantly from 1988 levels at p<0.001 (chi-square).

†1979 levels of sexual activity differed significantly from 1988 levels at p<0.01 (chi-square).

‡1979 levels of sexual activity differed signifcantly from 1988 levels at p<0.05 (chi-square).

Note: In Tables 2, 4 and 6, the "Black" category includes Hispanic and non-Hispanic blacks, while the "Nonblack" category includes whites, nonblack Hispanics and others.

The comparative data in Table 2 indicate that the proportion of young men who had ever had intercourse was significantly higher in 1988 than in 1979. While almost two-thirds of the 17–19-year-old young men living in metropolitan areas were sexually experienced in 1979, three-quarters of those questioned in 1988 reported that they had had intercourse. The overall proportions of those sexually experienced were significantly higher in 1988 among both blacks and nonblacks.

**Table 3. Percentages of never-married, sexually active males aged 15–19, by contraceptive method used at last intercourse, according to age and race/ethnicity**

| Age | All races (N= 1,244) | Black (N= 540) | White (N= 437) | Hispanic (N= 222) |
|---|---|---|---|---|
| **Condoms alone or with other methods** | | | | |
| 15–19 | 56.9 | 65.5 | 54.4 | 53.0 |
| 15 | 59.5 | 70.0 | 50.9 | 59.6 |
| 16 | 62.3 | 63.8 | 64.4 | 44.3 |
| 17 | 57.8 | 68.4 | 54.4 | 64.9 |
| 18 | 53.5 | 64.3 | 50.0 | 43.3 |
| 19 | 55.2 | 60.7 | 54.6 | 46.1 |
| **Effective female method without condom** | | | | |
| 15–19 | 19.7 | 14.5 | 22.2 | 15.6 |
| 15 | 4.9 | 8.6 | 3.2 | 6.1 |
| 16 | 8.2 | 11.1 | 7.4 | 7.2 |
| 17 | 20.6 | 15.9 | 23.7 | 12.5 |
| 18 | 28.6 | 16.3 | 34.1 | 14.5 |
| 19 | 23.0 | 19.7 | 22.6 | 32.3 |
| **Ineffective or no contraceptive method** | | | | |
| 15–19 | 23.4 | 20.0 | 23.4 | 31.3 |
| 15 | 35.6 | 21.5 | 45.9 | 34.3 |
| 16 | 29.5 | 25.1 | 28.1 | 48.5 |
| 17 | 21.5 | 15.7 | 22.0 | 22.6 |
| 18 | 17.9 | 19.4 | 15.8 | 42.2 |
| 19 | 21.8 | 19.7 | 22.8 | 21.5 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

Notes: In Tables 3, 4, 5 and 6, effective female methods include oral contraceptives, diaphragm, IUD, sponge, foam, jelly or suppository. For the 15–19 category, racial differences were significant at p<0.01; for the "All races" category, age differences were significant at p<0.001 (chi-square).

These data suggest that the proportion of young males sexually active at younger ages may have risen in the last nine years in spite of the conservative mood of the nation and the specter of AIDS. Between 1979 and 1982, the sexual activity rates of young women appeared to have stabilized after having risen sharply in the 1970s.[17] However, preliminary data from the 1988 National Survey of Family Growth indicate that the proportion of sexually experienced white females increased between 1982 and 1988, while the proportion of sexually experienced black females remained stable.[18]

## Condom Use

Young men who reported that they had experienced sexual intercourse at least once were asked whether they had used any method of contraception the last time they had had intercourse. A previous question had defined a contraceptive method as "something to prevent pregnancy or sexually transmitted diseases." The respondents were first asked about the method they had used, and were then asked whether their partner had used a contraceptive method.

As shown in Table 3, responses for this analysis were classified into the following mutually exclusive categories: used a condom, used an effective female method without a condom and used nothing or an ineffective method. Respondents in the first category could have used either a condom alone or a condom in combination with another method of contraception. Indeed, 14 percent of the sexually active males reported using condoms in combination with other female methods. Respondents placed in the second category reported that their partners had used oral contraceptives, the diaphragm, an IUD, the sponge, foam, jelly or suppositories, either alone or in combination with another method. The third category was composed of respondents who reported that they or their partner had used withdrawal, douching, rhythm or calendar methods or that they had used no contraceptive method.

In 1988, 57 percent of the young sexually active males in the sample reported that they had used a condom the last time they had had intercourse; 20 percent said that their partner had used an effective female method without a condom; and 23 percent reported use of no method or an ineffective method. There were significant differences between black, Hispanic and white respondents in their reported use of contraceptive methods. Black respondents had higher rates of condom use (66 percent) than white (54 percent) or Hispanic (53 percent) respondents. Compared with white respondents, both blacks and Hispanics had lower rates of use of effective female methods without condoms (22 percent, 15 percent and 16 percent, respectively). Hispanic young men reported higher rates of ineffective or no method use (31 percent) compared with either black or white young men (20 percent and 23 percent, respectively).

There were also significant differences in method use by age. The incidence of condom use decreased slightly with age, from 60–62 percent among 15- and 16-year-olds to 54–55 percent among 18- and 19-year-olds. The partner's use of an effective female method without condoms increased dramatically by age, from 5–8 percent among 15- and 16-year-olds to 29 percent among 18-years-olds and 23 percent among 19-year-olds. The use of ineffective methods or no contraceptive method decreased from 36 percent among 15-year-olds to a low of 18 percent among 18-year-olds, and then increased to 22 percent among 19-year-olds.

The levels of condom use reported in 1988 were surprisingly high compared with 1979 levels. Table 4 presents results from the two samples of a systematic comparison of 17–19-year-olds living in metropolitan areas. It shows that condom use at last intercourse more than doubled—from 21 percent to 58 percent—between 1979 and 1988. Among young, sexually active black men, the proportion increased from 23 percent to 62 percent and among nonblacks, it rose from 21 percent to 57 percent. The pattern of condom use across ages appears to have altered: Whereas in 1979, the use of condoms declined with age, condom use in 1988 remained high for 17-, 18- and 19-year-olds.

The increase in reported use of condoms has been accompanied by a decline in the use of ineffective methods or no methods. Although in 1979, half of the males reported that they had not used a contraceptive method or that they had used a relatively ineffective method at last intercourse, only 21 percent of young men in 1988 did so. The proportion using effective female methods without condoms at last intercourse was only slightly lower in 1988 (22 percent) than it was in 1979 (28 percent).

If respondents are reporting high rates of condom use at last intercourse, what are they reporting about methods used at first intercourse? As the data in Table 5 indicate, the respondents reported a high rate of condom use at first intercourse, too. More than half (55 percent) of the sexually active young men said that they had used a condom the first time they had had sexual intercourse. There were significant differences across the racial and ethnic groups. Although blacks reported higher rates of condom use at last intercourse than did their white and Hispanic counterparts, they reported lower rates of condom use at first intercourse: Forty-four percent of black young men said they had used a condom at first intercourse, compared with 58 percent of whites and 52 percent of Hispanics.

Relatively few respondents who said they had not used a condom reported that their partners had used an effective female method of contraception (seven percent over all) at the time of the respondent's first intercourse; there was little variation across racial or ethnic groups. The proportion who said they had used no method or an ineffective method at first intercourse was relatively high (38 percent). Moreover, the proportions using no method or an ineffective method were significantly higher among young blacks (51 percent) and Hispanics (43 percent) than among whites (34 percent).

There were also significant differences in contraceptive use at first intercourse according to age at first intercourse. The proportion who had used no method or an ineffective method was higher when first intercourse had occurred before the respondent turned 15 (48 percent when first intercourse occurred at ages 12–14) than when first intercourse had occurred at ages 15–17 (32 percent) or ages 18–19 (16 percent). In conjunction with this, the incidence of condom use was higher when first intercourse had occurred at age 15 or older: More than 60 percent of respondents who had had first intercourse at ages 15–19 had used a condom compared with 48 percent of respondents who had first experienced sexual intercourse between the ages of 12 and 14.

**Table 4. Percentages of never-married, sexually active metropolitan-area males aged 17–19, by contraceptive method used at last intercourse, according to age and race, 1979 and 1988**

| Method and age | 1979 | | | 1988 | | |
|---|---|---|---|---|---|---|
| | All (N=423) | Black (N=196) | Nonblack (N=227) | All (N=563) | Black (N=250) | Nonblack (N=353) |
| **Condoms alone or with other methods** | | | | | | |
| 17–19 | 21.1 | 23.2 | 20.5 | 57.5 | 62.0 | 56.5 |
| 17 | 25.3 | 17.4 | 27.8 | 56.8 | 64.9 | 54.7 |
| 18 | 22.4 | 36.9 | 19.1 | 57.1 | 59.9 | 56.4 |
| 19 | 16.1 | 15.6 | 16.2 | 58.9 | 60.4 | 58.7 |
| **Effective female methods without condoms** | | | | | | |
| 17–19 | 28.0 | 26.9 | 28.3 | 21.7 | 18.9 | 22.4 |
| 17 | 20.7 | 30.6 | 17.6 | 20.4 | 16.0 | 21.6 |
| 18 | 30.2 | 22.8 | 31.8 | 24.8 | 21.6 | 25.6 |
| 19 | 32.4 | 26.6 | 33.5 | 19.7 | 20.0 | 19.7 |
| **Ineffective or no contraceptive method** | | | | | | |
| 17–19 | 50.9 | 49.9 | 51.1 | 20.8 | 19.1 | 21.1 |
| 17 | 54.0 | 52.0 | 54.6 | 22.8 | 19.1 | 23.7 |
| 18 | 47.5 | 40.3 | 49.1 | 18.1 | 18.6 | 18.0 |
| 19 | 51.5 | 57.8 | 50.3 | 21.3 | 19.6 | 21.6 |

Note: All differences between 1979 and 1988 by age within racial groups were significant at $p<0.01$ (chi-square).

Table 6 (page 156) contrasts contraceptive use at first intercourse among sexually active metropolitan-area men ages 17–19 in 1979 with those in 1988. It shows that the proportion using a condom at first intercourse more than doubled between the two dates; both blacks and nonblacks exhibited this increase. The reported use of effective female methods of contraception without a condom was low at first intercourse in both 1979 and 1988 (nine percent and seven percent, respectively). Therefore, the increase in reported condom use has not resulted in a corresponding decrease in the use of effective female methods. Instead, there has been a substantial decrease in the proportion of young men who report having used no method or an ineffective method of contraception at first intercourse, from 71 percent in 1979 to 39 percent in 1988.

The substantial increase in condom use among adolescent males between 1979 and 1988 may be a result of the increased awareness of the risks of AIDS and increased knowledge about the capacity of condoms to prevent the transmission of the virus. Since AIDS is a relatively new phenomenon, the data gathered in 1988 can be used to test whether condom use at first intercourse has accelerated in recent years as information about AIDS has been disseminated to the general public and condoms have become more acceptable. To test this hypothesis, we used a logistic regression model to compare condom use at first intercourse by year of first intercourse while controlling for race and age of the respondents.

The most important result of this analysis is that if first intercourse occurred in 1987–1988, the odds of using a condom increased 110 percent relative to the base period of 1975–1982 ($p<0.005$). Use of a

**Table 5. Percentages of never-married, sexually active males aged 15–19, by contraceptive method used at first intercourse, according to age at first intercourse and race/ethnicity**

| Method and age at first intercourse | All races (N= 1,244) | Black (N= 550) | White (N= 443) | Hispanic (N= 222) |
|---|---|---|---|---|
| **Condoms alone or with other methods** | | | | |
| All ages | 55.0 | 43.5 | 57.9 | 52.4 |
| <12 | 16.5 | 27.0 | 2.2 | 11.8 |
| 12–14 | 48.3 | 38.9 | 52.3 | 41.9 |
| 15–17 | 60.8 | 56.6 | 61.5 | 59.5 |
| 18–19 | 64.1 | 37.4 | 63.7 | 66.1 |
| **Effective female methods without condoms** | | | | |
| All ages | 7.2 | 5.8 | 8.2 | 4.8 |
| <12 | 9.0 | 0.0 | 27.1 | 0.0 |
| 12–14 | 3.4 | 4.0 | 3.1 | 5.1 |
| 15–17 | 7.6 | 9.6 | 7.9 | 4.5 |
| 18–19 | 19.6 | 0.0 | 21.2 | 22.5 |
| **Ineffective or no contraceptive method** | | | | |
| All ages | 37.8 | 50.6 | 33.9 | 42.8 |
| <12 | 74.5 | 73.0 | 70.8 | 88.2 |
| 12–14 | 48.3 | 57.1 | 44.6 | 53.0 |
| 15–17 | 31.6 | 33.8 | 30.6 | 36.0 |
| 18–19 | 16.3 | 62.6 | 15.1 | 11.4 |

Note: For the "All ages" category, racial differences were significant at $p<0.001$; for the "All races" category, age differences were significant at $p<0.001$ (chi-square).

**Table 6. Percentages of never-married, sexually active metropolitan-area males aged 17–19, by contraceptive method used at first intercourse, according to age at first intercourse and race, 1979 and 1988**

| Method and age at first intercourse | 1979 | | | 1988 | | |
|---|---|---|---|---|---|---|
| | All (N=428) | Black (N=195) | Nonblack (N=233) | All (N=579) | Black (N=256) | Nonblack (N=323) |
| **Condoms alone or with other methods** | | | | | | |
| All ages | 19.9 | 14.6 | 21.1 | 54.3 | 42.1 | 57.3 |
| <12 | * | * | * | 11.7 | 23.7 | 0.0 |
| 12–14 | 16.5 | 11.7 | 18.8 | 36.3 | 37.0 | 35.9 |
| 15–17 | 21.9 | 17.9 | 22.4 | 60.5 | 52.0 | 61.9 |
| 18–19 | 25.1 | 53.9 | 23.2 | 75.3 | 42.2 | 77.2 |
| **Effective female methods without condoms** | | | | | | |
| All ages | 9.0 | 8.6 | 9.1 | 6.7 | 8.5 | 6.3 |
| <12 | * | * | * | 9.4 | 0.0 | 18.6 |
| 12–14 | 6.6 | 5.2 | 7.2 | 2.8 | 4.7 | 1.6 |
| 15–17 | 8.7 | 17.4 | 7.7 | 6.8 | 12.9 | 5.8 |
| 18–19 | 23.0 | 0.0 | 24.6 | 12.9 | 0.0 | 13.7 |
| **Ineffective or no contraceptive methods** | | | | | | |
| All ages | 71.1 | 76.8 | 69.8 | 39.0 | 49.4 | 36.4 |
| <12 | * | * | * | 78.9 | 76.3 | 81.4 |
| 12–14 | 76.9 | 83.1 | 74.0 | 60.9 | 58.2 | 62.5 |
| 15–17 | 69.4 | 64.7 | 69.9 | 32.8 | 35.1 | 32.3 |
| 18–19 | 51.9 | 46.1 | 52.3 | 11.8 | 57.8 | 9.2 |

*No males in category

Note: All differences between 1979 and 1988 by age within racial groups were significant at $p<0.01$, except the comparisons of 18–19-year-old blacks; no significance tests were conducted on categories of those younger than 12 (chi-square).

condom at first intercourse in 1983–1984 or in 1985–1986 did not show a significant difference from use during the base period. Being black was found to significantly decrease the odds of condom use at first intercourse by 29 percent ($p<0.01$). Age at first intercourse also has a significant independent effect on condom use at first intercourse: Each increasing year of age raises the odds of condom use 16 percent (0.001). While this model of condom use only contains a few variables, we interpret these findings as supporting the hypothesis that condom use among young men has increased rapidly and relatively recently as a result of increased public awareness of AIDS.*

## Knowledge About AIDS

During the 1988 interview, NSAM respondents were asked a series of questions designed to assess their knowledge of AIDS and their level of concern about the disease. In general, the results in Table 7 show that the young men in the sample were very knowledgeable about how AIDS was transmitted. On a battery of 19 questions used to assess knowledge levels, respondents achieved a mean correct score of 87 percent. Almost all the respondents knew that AIDS could be contracted through shared hypodermic needles (99 percent), blood transfusions (95 percent), sexual intercourse between men (99 percent), intercourse between a man and a woman (98 percent), vaginal intercourse (94 percent), anal intercourse (90 percent) and through intercourse with a partner who is an intravenous drug user (94 percent), bisexual (95 percent) or has had a lot of other partners (97 percent). The majority also knew that AIDS could not be transmitted by shaking hands or hugging (99 percent) or by sharing an apartment, class or office (96 percent).

Not as many respondents, however, knew that AIDS could not be transmitted by giving blood (60 percent), by being bitten by an insect (55 percent) or by sharing dishes or toilets (80 percent). In addition, scores were not as high regarding whether AIDS could be contracted through oral intercourse (67–69 percent) or from a person who has the AIDS virus but not the disease (79 percent). These findings are similar to those from several other studies of teenagers' knowledge levels about AIDS.[19]

Knowledge regarding AIDS varied by race. On average, black and Hispanic young men scored significantly lower on the knowledge items than did the white young men (83–84 percent compared with 88 percent). In addition, older teenagers knew significantly more about AIDS than did younger ones. Knowledge was not related, however, to whether or not the respondent had had sexual intercourse.

In response to a question that asked, "Which of the following describes how you feel? I worry about AIDS: all the time, frequently, occasionally, seldom or never," 15 percent of the sample responded that they worried all the time. Levels of concern about AIDS were much higher among black and Hispanic young men than among white young men: One-third of black males and 29 percent of Hispanic males said they worried all the time, compared with 10 percent of white males. The reported levels of worry about AIDS did not vary significantly by age, but sexually experienced respondents worried significantly more about AIDS than did respondents without sexual experience.

There was a similar response pattern to a question asking, "What do you think are the chances that you could get the AIDS virus in the next five years? Do you think you have: a very strong chance, a strong chance, some chance, not much chance or no chance at all?" While only five percent of the sample thought they had a strong or very strong chance of getting AIDS, more than twice as many black or Hispanic respondents chose this response as white respondents. Sexually experienced respondents were also significantly more likely to think that they had a strong chance of getting the virus. There was no significant variation in responses by age.

Respondents were also asked whether they agreed (a lot or a little) or disagreed (a lot or a little) with the following statements: "Using condoms to prevent AIDS is more trouble than it's worth" and "Even though AIDS is a fatal disease, it is so uncommon that it's not a big worry." Seventy-nine percent said they disagreed a lot with the statement about condoms being too much trouble. This proportion is consistent with the high levels of condom use that we report. Lower proportions of black and Hispanic young men disagreed with this statement than did white teenagers. Older teenagers reported higher levels of disagreement than did younger ones. Sexually experienced and inexperienced respondents appeared to share similar attitudes about condom use.

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*To check whether our results were an artifact of truncation bias (because those having intercourse before 1982 would all be less than 13 at the age of first intercourse), we examined condom use at first intercourse across time periods only for those respondents in our sample who initiated intercourse at ages 13–14. Since our sample consisted of 15–19-year-olds, every respondent was equally eligible to have initiated intercourse at ages 13–14. Among 13–14-year-old initiates, the proportions using condoms at first intercourse were 52 percent in 1975–1982, 33 percent in 1983–1984, 56 percent in 1985–1986 and 75 percent in 1987–1988. The difference between the 1987–1988 and 1975–1982 periods corresponds to a 2.64 odds ratio, which is quite close to our estimate of 2.1 from the logistic model.

A very high proportion (82 percent) of the sample disagreed a lot with the statement about AIDS being so uncommon that it is not a big worry. Black, white and Hispanic young men appeared to share the same opinions on this item, as did young men of different ages and different levels of sexual experience.

Since knowledge levels about AIDS were high, our next concern was to assess whether young men who participate in behaviors that put them at risk of catching or spreading the HIV virus show high levels of condom use. For this analysis, the sexually active males in the sample were divided into high-risk, moderate-risk and low-risk groups. The high-risk group was composed of young men who had engaged in homosexual activity (three percent said they had done so), had had a sexually transmitted disease (three percent), had ever had sexual intercourse with a prostitute (one percent), had used intravenous drugs or had had a sexual partner who had used intravenous drugs (two percent). Self-reports of these behaviors may result in underestimates of prevalence; nevertheless, about nine percent of the sexually active males in the sample reported behaviors that put them in this high-risk group. The moderate-risk group was composed of young men who were not in the high-risk group and who reported that they had had sex with someone who was a stranger to them (18 percent), had had five or more sexual partners in the past year (six percent) or had had sex with someone who had had many sexual partners (27 percent). Thirty-eight percent of the sexually active males in the sample fell into this group. The low-risk group consisted of the remaining 54 percent of all sexually active young men who reported none of the behaviors found in the other two groups.

Contraceptive use at last intercourse was significantly different across the risk groups ($p<0.001$). The low-risk group exercised the most vigilance of the three groups in using condoms at last intercourse; 66 percent of males in this category reported having done so. Young men in the moderate-risk group reported the lowest level of condom use—45 percent—whereas approximately 51 percent of the respondents in the high-risk group reported that they had used a condom at last intercourse, a proportion not unlike that among all sexually active males. However, within the high-risk group, only 21 percent of young men who had ever used intravenous drugs or who had had a sexual partner who had done so reported that they had used a condom at last heterosexual intercourse; this proportion was significantly lower ($p<0.001$) than the proportion who did not exhibit this risk behavior. Similarly, only 17 percent of the young men who reported that they had ever had sex with a prostitute said that they had used a condom at last intercourse ($p<0.01$). In contrast, 66 percent of young men who had ever had a homosexual experience or a sexually transmitted disease indicated they had used a condom at last heterosexual intercourse, the same proportion as the low-risk group.

Among males in the moderate-risk group, the levels of condom use were similar within subgroups, ranging from 37 percent among individuals with five or more sexual partners in the last year to 41 percent among individuals who had had sex with someone who had had many other partners. In a separate analysis, we found that condom use at last intercourse is negatively associated with the number of sexual partners in the last year. While 63 percent of young men with only one partner in the last year had used a condom at last intercourse, 56 percent of those with two partners, 45 percent of those with three or four partners and 37 percent of those with five or more partners had used a condom ($p<0.001$).

Overall, the young men who appear to have the highest rate of condom use are those who have engaged in homosexual intercourse, those who have ever had a sexually transmitted disease and those who have had a single sexual partner in the last year. This is a disparate group that includes individuals who might be labeled as being at very high and very low risk of AIDS. Certain high-risk subgroups, however, have significantly lower condom use rates than average for all teenagers. Young men who reported that they or their sexual partners were intravenous drug users, those who have ever had sex with a prostitute, a stranger or someone who has had many partners and those who themselves have had multiple partners report significantly lower rates of condom use at last intercourse than do other teenage males. Furthermore, a sizable minority of young males are in these high-risk categories: Forty-two percent of sexually active youths in the NSAM survey reported having engaged in one or more of these risky behaviors.

**Table 7. Among never-married males aged 15–19, mean percentage of correct answers on AIDS knowledge test and percentages expressing attitudes of concern about AIDS, by race/ethnicity, age and sexual experience**

| Characteristic | AIDS knowledge | Attitudes | | | |
|---|---|---|---|---|---|
| | | Worry all the time about AIDS | Strong chance could get AIDS | Disagree: Condoms too much trouble | Disagree: AIDS is uncommon so don't worry |
| **Total** | **87.0** | **15.4** | **4.6** | **78.8** | **82.1** |
| **Race/ethnicity** | | | | | |
| Black | 83.0 | 32.8 | 7.2 | 70.7 | 83.1 |
| White | 88.4 | 10.1 | 3.4 | 81.7 | 82.5 |
| Hispanic | 83.9 | 28.8 | 10.6 | 74.5 | 80.3 |
| **Age** | | | | | |
| 15 | 85.5 | 18.6 | 4.3 | 73.5 | 80.2 |
| 16 | 86.5 | 14.0 | 4.1 | 77.1 | 79.8 |
| 17 | 87.3 | 14.4 | 3.9 | 83.5 | 84.5 |
| 18 | 87.1 | 12.7 | 4.9 | 79.8 | 83.5 |
| 19 | 88.9 | 18.1 | 6.0 | 79.4 | 82.0 |
| **Sexual intercourse** | | | | | |
| Yes | 87.0 | 17.3 | 5.5 | 78.9 | 82.0 |
| No | 86.9 | 12.5 | 3.1 | 78.4 | 82.2 |

Note: Racial differences were significant at $p<0.001$ for AIDS knowledge and for the first three attitudes. Age differences were significant at $p<0.001$ for AIDS knowledge and at $p<0.05$ for "Disagree: Condoms too much trouble." Sexual intercourse differences were significant at $p<0.01$ for "Worry all the time about AIDS" and at $p<0.05$ for "Strong chance to get AIDS."

## Conclusions

While sexual activity appears to have risen among adolescent males since 1979, the data also indicate that reported condom use has increased dramatically among both black and nonblack youths. The net result is that even though more teenage males are sexually active, proportionately fewer males may be at risk of the negative consequences of unprotected sexual intercourse in 1988 than in 1979. These consequences include AIDS, other sexually transmitted diseases and unintended pregnancy.

Furthermore, among those who are sexually active, the apparent rise in condom use among teenage males has occurred relatively recently, in the past two years. This interpretation of the data is corroborated by evidence that condom sales increased between 1986 and 1987, that media attention to condoms went from infrequent to frequent after the Surgeon General's Report was released in November 1986, and that at least one other survey of teenagers in Massachusetts has reported increases in condom use between 1986 and

1988.[20] The apparent acceleration in condom use is consistent with increased knowledge and awareness about the risks of AIDS and the increased accessibility of condoms.

Cursory examination of knowledge and concern about AIDS among the young men in our sample has shown that they are, in general, very knowledgeable about how the disease is transmitted, that they do not dismiss it as uncommon or requiring too much trouble, and that small proportions worry all the time about the disease and think that they have a strong chance of getting the disease. Given the disproportionately high incidence of AIDS among blacks and Hispanics, the tendency of these youths to have significantly lower levels of knowledge about the disease and to be more likely to believe that condoms are too much trouble is a cause for concern. On the other hand, young black and Hispanic men are more likely to worry all the time about AIDS and to think that their chances of getting AIDS in the next five years are high—views that are consistent with the reality of the epidemiology of AIDS and that would suggest the basis for motivation to avoid transmission. Young men who are sexually experienced are also more likely to worry about AIDS and to assign higher risks to themselves than are sexually inexperienced males. It appears that public education efforts to disseminate information about AIDS have reached most teenage men.

Although more than half of sexually active teenage males report that they used a condom at last intercourse, the rates of utilization are significantly lower among certain subgroups of this population. Unfortunately, lower rates of use are reported by young men who engage in behaviors that put them at greater risk of AIDS transmission—the teenagers for whom higher than average rates of condom use would be extremely desirable. It is clear from these data that preventive efforts need to target high-risk populations, such as intravenous drug users and their partners.

In spite of the indications of a dramatic increase in condom use among adolescent males in general since 1979, we may well ask whether the increase has been sufficient, given the catastrophic proportions of the AIDS epidemic. Behavior has changed in response to AIDS, but utilization rates should be higher still if sexually active teenagers are to be protected against the virus. We have already targeted high-risk teenagers—those with a history of involvement with intravenous drugs, prostitutes or many sexual partners—for additional efforts. In addition, we believe that condom use rates among teenagers who have had homosexual contacts or who have had sexually transmitted diseases should be well above average and, therefore, require continued efforts at improvement. We are also not sanguine about the one-third of low-risk, sexually active teenage males who did not use condoms at last intercourse. Improving condom use among all sexually active teenagers should be a national priority.

These new data indicate that the contraceptive behavior of sexually active teenagers is susceptible to change. The use of condoms is clearly more acceptable among teenage men since AIDS became a major public health concern. More than half of the sexually active young men interviewed in 1988 said that they had used a condom at last intercourse. This is not necessarily a measure of consistency of use, and the question remains whether consistent condom use among sexually active teenagers can become the norm. The new NSAM findings suggest that some movement may have been made toward the attainment of this objective.

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# Fathers of Children Born To Young Urban Mothers

*By Janet B. Hardy, Anne K. Duggan, Katya Masnyk and Carol Pearson*

**Summary**

Fathers of babies born to a sample of urban mothers younger than 18 at delivery ranged in age from 14–50 and were, on average, 2–4 years older than the mothers. Among the adolescent women who had given birth to their first child, 28 percent of the partners of black women and 45 percent of the partners of white women were 20 years of age or older. The educational attainment of the fathers was very low, particularly among older whites. At approximately 15 months after the child's birth, 36 percent of the fathers were neither in school nor working.

Three-quarters of the pregnancies among the young white mothers and 95 percent of those among the black mothers were unplanned, but only six percent of the white mothers and 16 percent of the black mothers were using a contraceptive at the time of conception. Only 16 percent of the fathers were living with or married to the mother of their child at 15 months after birth. About 90 percent of the fathers had spent time with their child during that period, but frequency of contact declined markedly with time. Overall, 20 percent of the fathers had children by other women.

**"Only one in six children born to young teenagers in Baltimore lived with the father, while a . . . large number of the fathers lived with their own parents. Moreover, one father in five had at least one other child by a different woman."**

## Introduction

The role played by the male in the problem of adolescent pregnancy in the United States has received increasing attention in recent years. Many of the studies of young fathers have shown that they, like teenage mothers, tend to be from among the poorer and less educated groups in society, and that they may face serious and long-term social and economic disadvantages, when compared with young men who postpone parenting until a later age.[1]

The existing data on adolescent fathers suffer from serious shortcomings, however. Adolescent fathers are difficult to reach in any systematic way, because a great deal of demographic information about them is missing, especially in some parts of the country, and because an unknown but considerable proportion of men deny paternity.[2] To complicate matters, some studies include only teenage fathers, while others cover fathers in their early 20s.[3]

Even when studies include men in their early 20s, the picture provided by most is inadequate precisely because of the age limit. Teenage fathers, unlike teenage mothers, actually represent a very small population group. National birth statistics show that in 1986, only three percent of all fathers were teenagers when their first child was born.[4] Because the fathers of babies born to women under the age of 20 are usually older than the mothers, a broader perspective on the male contribution to teenage pregnancy can be obtained by looking at all men who father children born to adolescent women, regardless of their age at the time of the child's birth. However, there are no national data available on the number or the characteristics of such men.

In an earlier analysis of the data used in the present study, we found that 12 percent of resident recorded live births in Baltimore in 1983 were to parents who were both under the age of 20. A further 14 percent were to teenage mothers and were fathered by men over the age of 20; an additional two percent were to women over the age of 20 whose male partners were still in their teens. Altogether, in 28 percent of births, one or the other of the partners was an adolescent.[5]

The present report focuses on a subgroup of the Baltimore sample of birth registrations: all men who, in 1983, fathered children by mothers under the age of 18. The study focuses on younger teenage mothers because they are physically, cognitively and emotionally less mature, thus placing themselves and their babies at higher medical and social risk.[6]

Although no direct information was available about the financial situation of the fathers in question, it seems plausible, based upon what we know of their educational level, employment history and living arrangements that they were similar to the mother's circumstances. On the basis of the earlier study, we know that the mothers lived predominantly in very poor inner-city neighborhoods. There were 6.3 members in each black household, on average, and 5.0 in each white household. Seventy-six percent of the families in which the teenage mothers were living at three months after their child's birth were headed by women. Average family incomes were extremely low: Thirteen percent earned less than $5,000 a year, 49 percent, under $10,000, and only 14 percent, $20,000 or more, with no significant racial differences in this distribution. Ninety percent of the teenage mothers received

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**Table 1. Percentage distribution of fathers, by mother's race and father's age at child's birth, according to mother's age at child's birth and to birth order, Baltimore, 1983**

| Mother's race and father's age | Mother's age | | | | | |
|---|---|---|---|---|---|---|
| | 1st-order births | | | | | 2nd-order births |
| | Total | <15 | 15 | 16 | 17 | All ages |
| **All races** | **(1,095)** | **(96)** | **(181)** | **(336)** | **(482)** | **(162)** |
| ≤15 | 5 | 17 | 10 | 3 | 2 | 1 |
| 16–17 | 26 | 42 | 38 | 29 | 16 | 12 |
| 18–19 | 39 | 27 | 33 | 40 | 43 | 29 |
| ≥20 | 31 | 15 | 20 | 29 | 41 | 59 |
| **Black** | **(900)** | **(92)** | **(152)** | **(275)** | **(381)** | **(132)** |
| ≤15 | 5 | 17 | 9 | 3 | 1 | 1 |
| 16–17 | 27 | 42 | 40 | 30 | 15 | 12 |
| 18–19 | 40 | 26 | 33 | 41 | 46 | 29 |
| ≥20 | 28 | 14 | 18 | 26 | 38 | 58 |
| **White** | **(195)** | **(4)** | **(29)** | **(61)** | **(101)** | **(30)** |
| ≤15 | 4 | * | 10 | 3 | 2 | 0 |
| 16–17 | 21 | * | 28 | 23 | 18 | 10 |
| 18–19 | 31 | * | 31 | 33 | 29 | 30 |
| ≥20 | 45 | * | 31 | 41 | 52 | 60 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

*Fewer than 10 cases.

Notes: Percentages may not add to 100 because of rounding. Figures in parentheses are the numbers of fathers.

welfare, and 95 percent obtained Medicaid coverage for themselves or their babies over the course of an 18-month follow-up.[7]

## Methodology

In this study, information about the characteristics of the fathers of children born to young adolescents comes from two different sources: the child's birth certificate, which contains some data on the father's race, age and educational level;[*] and information provided by the teenage mother about the father's situation and his relationships with her and her baby. The latter was collected during interviews carried out at three months after delivery and at 15–18 months postpartum. The fact that the second type of information on the father was derived from the perceptions and recollection of the mother means that it was both subjective in quality and subject to reporting error. The completeness of the mother's responses to questions was generally high but did vary somewhat, depending on how long and how well she had known the father of her child. However, since the interviewers found the subjects to be remarkably forthright, we have concluded that their reporting was reliable and, thus, that the study offers valuable new information about urban fathers of children born to young adolescents.

From the 1,312 adolescents under age 18 who gave birth in Baltimore in 1983, the researchers selected a disproportionate random sample of 529 women. The sample was designed to provide a large enough basis for statistical analysis in each age, race and parity group.[†] The teenage mothers were informed by mail that they had been chosen for the study. They were asked to return an enclosed, stamped postcard if they did not wish to participate.

Of the original 331 black adolescents selected, 25 (eight percent) refused to participate; among the 198 whites, 35 (18 percent) declined an interview. An additional 26 teenage mothers could not be located, and 26 more refused informed consent at the time of the first home visit. An additional 22 mothers had moved out of the city, four had put their children up for adoption and the children of two had died. Thus, 389 mothers (74 percent of the original sample) agreed to the initial interview that was scheduled three months after delivery. Of these teenagers, 272 were black and 117 were white. At 15–18 months after birth, a further 26 (seven percent) declined participation. The remaining 363 were reinterviewed, but only 355 had sufficient information about the father for inclusion in most analyses.

To determine whether losses from the original sample were likely to bias the results of the study, we used birth certificate information to compare the final respondents and the nonrespondents for such characteristics as age at birth, education, timing of onset of prenatal care, medical assistance status, pregnancy complications, preterm delivery, low birth weight and Apgar score. No significant differences between the two groups were found, and the final sample is believed to be representative of all births among Baltimore residents under the age of 18 in 1983.

However, it should be emphasized that the fathers covered by the study were not completely representative of all males responsible for teenage pregnancies in Baltimore, since we know from our earlier analysis that 46 percent of teenagers younger than 18 who became pregnant in 1983 terminated the pregnancy by an abortion, and that a small, unknown proportion had miscarriages.[8]

During the initial interview, trained interviewers obtained a large amount of information about the young parents and their children and about each partner's living arrangements. The interviews were reviewed by a field supervisor for consistency and completeness, and a random 10 percent of the sample were reinterviewed by telephone to check for the reliability of the responses. Chi-square analysis, t-tests and one-way analysis of variance were used to assess the statistical significance of the findings in terms of the father's age and the mother's race and parity.

## The Fathers and Their Role

Table 1 shows a percentage distribution of the fathers by age, according to the mother's age and race. So that the analysis of the father's age may be as complete as possible, it is based on information obtained from the birth certificates of babies born to all Baltimore girls 17 and under in 1983 that had no missing data (N=1,095).

The fathers of babies born to black mothers having their first child ranged in age from 14 to 50 years, but almost three-quarters (72 percent) were under 20. The age range of the partners of white mothers was from 15 to 39 years, and 56 percent were 19 or younger. For second-order or higher-order births, the father's ages were older (59 percent were 20 and older), as might be expected. On average, the fathers of all infants born to white teenage women were four years older than were the mothers, and those of infants born to black teenage mothers were 2–3 years older (not shown).

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[*] The birth certificates contained complete information on the mother's age, race and marital status, but lacked the father's age in three percent of black births and five percent of white births. The father's educational status was missing in 15 percent of the black, and 16 percent of the white, birth registrations.

[†] The disproportionate, stratified random sampling that was necessary to adjust for the existence of small numbers in some subgroups required the application of weights to achieve sample distributions paralleling those of the original population. All white mothers under the age of 16 had to be included, whereas only one in five black mothers aged 17 were required for analysis. The number selected in each subgroup was determined on the basis of births to girls 17 and younger in 1981.

**Table 2. Percentage distribution of fathers, by educational achievement and school/work status, according to mother's race and tc father's age at child's birth**

| Education and school/ work status | Mother's race and father's age | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | All | White | | | | Black | | | |
| | (N=355) | Total (N=103) | <18 (N=17) | 18–19 (N=38) | >19 (N=48) | Total (N=252) | <18 (N=78) | 18–19 (N=97) | >19 (N=77) |
| **Highest completed grade†** | | | | | | | | | |
| ≤9 | 24 | 53 | 55 | 58 | 48 | 11** | 22 | 6 | 8 |
| 10–11 | 37 | 31 | 37 | 34 | 28 | 40 | 49 | 34 | 37 |
| 12 | 36 | 16 | 8 | 8 | 24 | 45 | 29 | 54 | 49 |
| Postsecondary | 3 | 0 | 0 | 0 | 0 | 4 | 0 | 5 | 6 |
| **School/work status†** | | | | | | | | | |
| In school and working | 1 | 1* | 0 | 3 | 0 | 1*** | 1 | 2 | 0 |
| In school only | 8 | 2 | 14 | 0 | 0 | 11 | 28 | 5 | 3 |
| Working only | 54 | 74 | 51 | 73 | 81 | 46 | 26 | 51 | 57 |
| Neither in school nor working | 36 | 23* | 35 | 24 | 19 | 42 | 44 | 41 | 40 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

*For whites, age differences were significant at $p<0.05$.

**For blacks, age differences were significant at $p<0.01$.

***For blacks, age differences were significant at $p<0.001$.

†For this category, racial differences were significant at $p<0.001$.

Table 2, which is based only on births to the teenage mothers who were interviewed 15–18 months after delivery, describes the educational level and work status of the fathers at the time of the interview. There were significant racial differences in these characteristics: Fifty-three percent of the partners of white mothers, compared with 11 percent of those of black mothers, had had nine or fewer years of schooling; only 16 percent of partners of white mothers (compared with 51 percent of those of blacks) had finished high school.

At the time of the second interview, nine percent of fathers were still in school, 54 percent were working and no longer in school, and 36 percent were neither in school nor working. School attendance was higher among the partners of black mothers than among those of white mothers (12 percent compared with three percent), and a higher proportion of the partners of white mothers than of black mothers were in the labor force (74 percent compared with 46 percent). There were marked racial differences in the proportion of fathers who were neither in school nor working. Among partners over the age of 19 at the time of the child's birth, white mothers reported that 19 percent were neither working nor in school at the time of the interview; the comparable proportion among black mothers was 40 percent.

Table 3 presents data on certain aspects of the father's relationship with the mother of his child. According to the accounts given by the mothers, most of the fathers had been known to them for some time before the conception. Only nine percent of couples had known each other for less than six months, and more than half had been acquainted for more than two years before conception. There was very little variation by race in the length of the prior relationship. However, there were significant differences in the type of the current relationship. About one-third of the fathers of infants born to white mothers, compared with almost none of the fathers of infants born to black mothers, had been married to their child's mother, and higher proportions of the partners of white mothers than of black mothers had lived with the mother at some point without being married.

At the time of the interview, the young mothers not married to the father of their child were asked whether they thought it likely that they would marry him. Almost identically high proportions for both races, about six in 10, thought it unlikely. Similarly, three-quarters of both black and white teenage mothers not living with or married to the father said they thought it unlikely that they would ever live together.

Overall, 20 percent of the young mothers reported that the father of their baby had a child (or children) by another woman or by other women. The difference between the races was statistically significant for fathers over the age of 19—29 percent of the partners of white mothers and 36 percent of those of black mothers had other children ($p<0.001$).

The teenage mothers were also asked detailed questions about whether they had planned to have the child they gave birth to in 1983, and whether they had been practicing contraception at the time pregnancy occurred (Table 4—page 162). Nine out of 10 births had been unplanned (75 percent of those to white mothers and 95 percent of those to black mothers). Overall, fewer than half of the couples (45 percent) had discussed the possibility of pregnancy, although among couples closer in age (that is, where the fathers were younger), slightly higher proportions had done so. If the couple had discussed the

**Table 3. Percentage of fathers, by relationship with child's mother, according to mother's race and to father's age at child's birth**

| Relationship | Mother's race and father's age | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | All | White | | | | Black | | | |
| | | Total | <18 | 18–19 | >19 | Total | <18 | 18–19 | >19 |
| **Knew mother before conception for:** | | | | | | | | | |
| <6 months | 9 | 8 | 0 | 11 | 8 | 11 | 10 | 4 | 16 |
| 6–11 months | 8 | 13 | 6 | 8 | 21 | 6 | 7 | 5 | 8 |
| 12–23 months | 24 | 20 | 29 | 15 | 23 | 26 | 31 | 25 | 23 |
| ≥24 months | 58 | 58 | 65 | 66 | 49 | 57 | 52 | 66 | 53 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Married to mother** | | | | | | | | | |
| Before learning of pregnancy*** | 5 | 14 | 19 | 8 | 17 | 1 | 0 | 1 | 1 |
| At child's birth*** | 9 | 27 | 29 | 24 | 32 | 1 | 0 | 1 | 1 |
| 3 months after birth*** | 8 | 22 | 27 | 16 | 26 | 2 | 0 | 3 | 2 |
| 15 months after birth*** | 8 | 23 | 23 | 18 | 29 | 2 | 0 | 3 | 2 |
| **Living with child's mother:** | | | | | | | | | |
| At birth* | 7 | 12 | 12 | 11 | 13 | 4 | 2 | 7 | 4 |
| 3 months after birth | 9 | 12 | 5 | 13 | 14 | 7 | 6 | 9 | 7 |
| 15 months after birth | 8 | 11 | 6 | 14 | 11 | 7 | 6 | 7 | 8 |

*For this group, racial differences were significant at $p<0.05$.
***For this group, racial differences were significant at $p<0.001$.

**Table 4. Percentages of mothers' responses to questions concerning their pregnancy and concerning contraceptive practices, according to mother's race and to father's age at child's birth**

| Responses | Mother's race and father's age | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | All | White | | | | Black | | | |
| | | Total | <18 | 18–19 | >19 | Total | <18 | 18–19 | >19 |
| Pregnancy unplanned*** | 89 | 75 | 66 | 78 | 75 | 95 | 96 | 94 | 96 |
| Couple discussed possibility of pregnancy* | 45 | 56 | 63 | 55 | 54 | 41† | 52 | 30 | 45 |
| Pregnancy discussed before conception—desired by: | | | | | | | | | |
| Father§ | 55 | 61 | 52 | 71 | 56 | 52† | 34 | 64 | 59 |
| Mother*** | 39 | 64 | 51 | 60 | 72 | 25 | 13 | 29 | 33 |
| Pregnancy desired by mother*** | 21 | 41 | 30 | 45 | 42 | 13 | 11 | 12 | 15 |
| Contraceptives used at time of conception** | 13 | 6 | 0 | 2 | 10 | 16 | 10 | 18 | 18 |
| Condom/withdrawal used before conception | 26 | 33 | 19 | 31 | 40 | 24 | 20 | 27 | 22 |

*For this group, racial differences were significant at $p<0.05$.

**For this group, racial differences were significant at $p<0.01$.

***For this group, racial differences were significant at $p<0.001$.

†For blacks, age differences were significant at $p<0.05$.

§Denominator is those who discussed the possibility of pregnancy.

likelihood of pregnancy, the fathers were more likely than the mothers to have desired pregnancy (especially the older partners of black mothers), and white mothers were considerably more likely than their black counterparts to say they had wanted the pregnancy. However, only one in five of all the teenage mothers said they had wanted the pregnancy.

Even though most of the pregnancies were unplanned, very few couples had been using a contraceptive method at the time of conception: Six percent of white mothers and 16 percent of black mothers reported doing so. Moreover, only one in four couples had ever at any time in the relationship used a form of birth control dependent on the male partner (i.e., the condom or withdrawal).

Three-quarters of the fathers had been told of the pregnancy within one week of its diagnosis, and a further 10 percent, within one month. Less than one percent were never told. Two-thirds of the fathers not living with the teenage mothers were said to have given assistance of some kind during the pregnancy.

Ninety percent of fathers who were neither married to nor living with the child's mother had spent some time with the child during the 15 months since the birth. The proportion was statistically significant by race of the mother, with 92 percent of black mothers and 83 percent of white mothers reporting that the father had spent time with the child ($p<0.05$). There was very little variation by father's age. Most of these contacts took place in the mother's home. However, only 28 percent of all fathers shared equally with the mothers in making childrearing decisions, and only two percent were the primary decisionmakers.

Data pertaining to the father's relationship with his child if he was neither married to nor living with the mother at the time of the second interview are shown in Table 5. This group represents 88 percent of the 363 fathers whose partners were reinterviewed at 15–18 months.

Over half of noncohabiting fathers visited their child daily during the first three months after birth, and 27 percent visited weekly. Fourteen percent saw the child less frequently, and seven percent had no contact during that period. (There were no significant differences in these statistics by the father's age or race). By the time one year had passed, however, the frequency of the father's contact with his child had diminished further. Less than one-quarter now had daily contact, a third saw the child weekly, one-quarter visited only once a month and 16 percent had no contact whatsoever.

One-half of the mothers complained of receiving too little help from the father in raising the child. Black mothers were more likely than white mothers to report that the father helped too little (55 percent compared with 33 percent—$p<0.01$). Among white mothers, fathers aged 20 and older were reported as significantly less helpful than the younger ones ($p<0.05$). About six in 10 young mothers said that the father contributed too little financial support, and black mothers were significantly more likely to make this complaint than were white mothers (65 percent compared with 46 percent—$p<0.01$).

Help with child care and financial support were also examined among couples who were married or living together. Of this small group, only 15 percent of cohabiting mothers (13 percent of blacks and 17 percent of whites) and only 20 percent of those who were married (who were primarily whites) reported that their partners did not help enough with child care. As might be expected, these levels of dissatisfaction are much lower than those found among teenage mothers living apart from the fathers, and the contrast is particularly pronounced among blacks ($p<0.01$).

Similarly, teenage mothers who cohabited with the father of their child were much less likely than those living apart to complain of inadequate financial support. Overall, only 16 percent of cohabiting mothers, compared with 61 percent of those living apart, said that they received too little financial help. Among black mothers, 20 percent of those who cohabited, compared with 65 percent of those living separately, reported insufficient financial support ($p<0.001$); among whites, the proportions were eight percent and 47 percent, respectively ($p<0.05$).

By the time the child was about 18 months old, only 16 percent of all fathers were married to or living with the mother. Most of these couples lived in their own household, although those in which the father was 20 and older were more likely to do so than those in which he was younger than 20. Whites were more likely to have their own household than were blacks. The most common arrangement otherwise was to be living with one or the other set of the child's grandparents.

Among the 84 percent of fathers living separately from their children, 60 percent lived with a parent, six percent lived with a woman who was not the mother, seven percent were in jail (11 percent of blacks

**Table 5. Percentage distribution of fathers not married to or living with the child's mother, by contact with child, according to mother's race and to father's age at child's birth**

| Father's contact with child | Mother's race and father's age | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | All | White | | | | Black | | | |
| | (N=321) | Total (N=76) | <18 (N=13) | 18–19 (N=29) | >19 (N=34) | Total (N=245) | <18 (N=78) | 18–19 (N=91) | >19 (N=76) |
| **In first three months saw child:** | | | | | | | | | |
| Daily | 52 | 53 | 38 | 68 | 46 | 51 | 56 | 50 | 47 |
| Weekly | 27 | 26 | 26 | 13 | 37 | 28 | 27 | 27 | 29 |
| ≤Monthly | 14 | 14 | 18 | 10 | 16 | 13 | 11 | 17 | 13 |
| Never | 7 | 7 | 18 | 9 | 0 | 7 | 5 | 6 | 11 |
| **At 15–18 months saw child:** | | | | | | | | | |
| Daily | 24 | 30 | 29 | 31 | 28 | 23 | 15 | 20 | 34 |
| Weekly | 36 | 33 | 32 | 32 | 35 | 36 | 44 | 34 | 32 |
| ≤Monthly | 24 | 17 | 19 | 22 | 12 | 26 | 29 | 29 | 21 |
| Never | 16 | 20 | 19 | 16 | 25 | 15 | 13 | 17 | 1 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

over 19) and four percent were in the armed forces. In 10 percent of cases (21 percent if the father was white and over 19), the mother did not know the whereabouts of her child's father.

## Conclusions

This study looks at a large sample of the fathers of children born to young adolescent women. The approach is unique because it is not limited to the adolescent or young adult father but investigates the characteristics of all men, regardless of age, who have fathered children by very young women. The results, as might be expected, reveal some similarities with those of earlier studies that concentrated on adolescent or young adult fathers, but also show some interesting differences, probably because of the wider age-range studied.

It seems surprising that so few fathers were under the age of 16, since sexual activity has been shown to start at a very early age among poor urban populations.[9] Yet these findings are similar to those based on the National Longitudinal Survey of Labor Market Experience of Youth.[10] The finding raises the question of whether young males may be infertile or subfecund during the early years following puberty.

The considerably older age of some of the fathers raises possible questions about sexual abuse, an issue that this study did not address directly. However, anecdotal information suggests that sexual abuse is not infrequent in this and other similarly disadvantaged populations. In our own clinic work in Baltimore, we have encountered several young adolescents who bore children fathered by much older men—their own fathers or their mothers' boyfriends, for example.

The results of the study confirm the findings of a large number of other studies,[11] in that the Baltimore fathers had, in general, low levels of schooling (especially among the partners of white mothers) and poor employment histories. Four in 10 fathers of children born to black mothers and two in 10 fathers of children born to white mothers were unemployed; even among those fathers over the age of 19, many had never worked. The obvious implication of these findings is that, even if they had wished to do so, most of the fathers in the study did not have the necessary skills to provide a stable, independent home for their families. In addition, some research suggests that young men in job-training programs have lower fertility than those not exposed to such opportunities.[12]

Only one in six children born to young teenagers in Baltimore lived with the father, while a surprisingly large number of the fathers lived with their own parents. Moreover, one father in five had at least one other child by a different woman. In addition, seven percent were in jail (and several others had served prison terms). Research by other investigators also found criminal records to be common among the fathers of babies born to adolescent women.[13]

Despite the fact that such a large number of fathers were living in conditions not particularly conducive to stability or control over their own lives, many of them maintained some kind of a relationship with their children (especially soon after the birth) and contributed food, diapers, clothing, some child care and some financial assistance. The fact that six out of 10 teenage mothers considered the father's contributions to the child's upbringing inadequate is not surprising in light of the men's probably poor financial situation.

If the aim of social programs is to strengthen family relationships and improve the conditions in which young children are raised, certain services deemed essential for young women are no less important for young men. These include programs to encourage the prevention of unwanted pregnancy (e.g., sex education in schools, courses on the responsibilities of parenthood and family planning services) and comprehensive services to support these parents and their babies. Several successful models already exist for such programs: School-based programs in St. Paul and Baltimore[14] have proved successful in reducing pregnancy rates among the student body and in encouraging high school students to delay sexual activity. There are successful examples of comprehensive programs for pregnant teenagers that include services for fathers;[15] and a number of family support centers and programs around the country are beginning to meet the needs of very young parents.[16]

Despite these initiatives, such programs, although important and effective in preventing pregnancies and improving health and developmental outcomes when pregnancy occurs, are tantamount to bandaids. The study findings presented here suggest that the basic problem of teenage pregnancy is poverty. America's underclass, as has so often been pointed out, consists largely of female-headed, single-parent families.[17] Yet, in comparison with most Western, industrialized nations, the United States lacks the kind of broad social policies and programs that are essential if the country is to address the conditions that perpetuate the existence and growth of such families. These much-needed programs would include adequate support to poor families; school programs that train and enable young people to join today's modernized, nonindustrial labor force; and job-training programs for school dropouts that would enable them to more easily support their own families.

### References

1. W. Marsiglio, "Adolescent Fathers in the United States: Their Initial Living Arrangements, Marital Experience and Educational Outcomes," *Family Planning*

*(Continued on page 187)*

# Effects of a Comprehensive Program For Teenage Parents: Five Years After Project Redirection

*By Denise F. Polit*

The five-year results from Project Redirection provide the strongest supporting evidence yet that comprehensive programs designed to benefit young mothers can have positive long-term effects both for the mothers and for their children.

## Summary

A fifth-year follow-up of teenage mothers who had enrolled in Project Redirection, a comprehensive program of services for pregnant and parenting teenagers, revealed many long-term benefits of the program. Administered when the young mothers were, on average, 22 years old, the follow-up found that program participants had better employment records, higher average earnings and lower rates of welfare dependency than a comparison group of similar young mothers who had not enrolled in Project Redirection. Moreover, participants had higher scores on a test of parenting, were more likely to have breastfed their infants and were more likely to have registered their children in Head Start. The children of the Project Redirection participants (whose average age was five and one-half) were better off than their comparison-group counterparts in terms of cognitive, social and emotional development.

The two groups of young mothers were similar in terms of their educational attainment after five years, but differences in fertility were observed. Although the two groups had experienced similar numbers of pregnancies, Project Redirection participants were less likely to have terminated a pregnancy by means of induced abortion, and as a result had had a higher average number of live births. The economic status of women who were able to limit their childbearing was generally more favorable than for those who were not able to do so, but participation in Project Redirection was associated with improved employment outcomes and greater self-sufficiency among all of the women, regardless of the size of their family.

## Introduction

Efforts to address the problem of teenage pregnancy, which has become a prominent social issue in the 1980s, have included preventive programs designed to reduce the incidence of unintended adolescent pregnancy and ameliorative programs designed to reduce the negative consequences of an early birth. Unlike the ameliorative programs of the 1970s, which tended to focus on a single aspect of the problem (such as adverse health consequences), most such programs launched in the 1980s have been comprehensive in nature. The latter have offered a range of services designed to address the many needs of a vulnerable, high-risk group of young women. Comprehensive programs have generally come to be accepted as the appropriate response to this complex social problem. However, there has been little evidence documenting that such an approach has the intended effect.

Project Redirection was a large-scale, comprehensive program designed to "redirect" the lives of disadvantaged teenage mothers onto a path of economic self-sufficiency. At its inception, the demonstration program was distinctive both in its approach to service delivery and in its emphasis on rigorous research. It attracted considerable interest among policymakers and program operators, and many of its features have been widely replicated.

The project began in 1980 under the direction of the Manpower Demonstration Research Corporation and was implemented by community-based organizations in four cities—Boston, Massachusetts; New York City (Harlem); Phoenix, Arizona; and Riverside, California. Each program either offered a comprehensive array of services directly to its participants or served as a broker to help teenage mothers find a particular service in the community. The participants were a highly disadvantaged group of young women: To be eligible for inclusion in Project Redirection, young women had to be pregnant or already a parent, lack a high school diploma, be 17 or younger and live in a low-income household.

Project Redirection was one of the earliest comprehensive programs and coordinated a wide array of counseling and other services, including those related to education, employment, parenting, health and life management. The inclusion of employment-related services for this school-age population was an especially distinctive feature of the program. Services were provided in a supportive, caring environment that aimed at enhancing the teenagers' self-esteem.

Three mechanisms were developed to help the teenagers take advantage of these services. First, the programs involved the use of mentors—community women from the local area who volunteered to serve as role models and support the teenagers as they worked toward their personal goals. Second, the community women and other staff members helped the teenagers to develop "Individual Participant Plans," which specified the services and activities that each individual would need in work-

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ing toward self-sufficiency. Finally, the program featured peer-group sessions that offered opportunities for social support, mutual problem solving and affirmation of the program goals. On average, the young mothers were enrolled in the program for about one year, longer than is typical in most teenage parent programs.[1]

Earlier evaluations of Project Redirection, although initially favorable, yielded somewhat discouraging results for anyone seeking evidence of the efficacy of a comprehensive model.[2] At one year after enrollment, analyses revealed many group differences, all favoring the Project Redirection teenagers. They did better than the comparison group in terms of school enrollment, employment experience and avoidance of a repeat pregnancy, even after statistical controls were introduced to take into account baseline differences between groups.

At two years, the outcomes involving Project Redirection participants continued to be more favorable than those of the comparison teenagers on a number of cumulative measures: They had spent significantly more time in school, had accumulated more employment experience and had more effectively delayed subsequent births. However, these differences had largely accrued during the first year of the study, when most participants were still enrolled in the program. In fact, the two groups were similar in terms of outcomes describing their actual status after two years: The Project Redirection teenagers as a whole were no more likely than the comparison teenagers to have completed their basic schooling (about 20 percent of both groups) or to be employed (15 percent), and they were as likely to be receiving Aid to Families with Dependent Children (AFDC) and to have had a repeat pregnancy (60 percent and 47 percent, respectively).

Nevertheless, subgroups of Project Redirection teenagers appeared at the two-year point to have significantly benefited from program participation. For example, among teenagers who were dropouts at baseline, nearly twice as many Project Redirection participants as comparison teenagers had obtained a diploma or a GED (high school equivalency certificate) at the second-year interview (20 percent vs. 11 percent). Among the teenagers who were receiving AFDC benefits at baseline, significantly more Project Redirection participants than comparison teenagers were employed two years later (16 percent vs. 10 percent).

Although these subgroup findings were important, the disappearance of the initially positive overall results led many observers to conclude that the impact of this comprehensive intervention had been largely transitory. This article summarizes a five-year follow-up undertaken to determine whether the initial effects of Project Redirection continued to dissipate or whether there were noteworthy long-term results.

## Methodology

Because of a number of constraints, it had proved impossible to incorporate a random assignment design in Project Redirection for use in evaluation.* Nevertheless, the project provided for an evaluation that was substantially more rigorous than is typical, and was specifically designed to avoid many of the shortcomings of other evaluations of teenage parent programs.[3]

The evaluation of Project Redirection involved the collection of data from a sample of program participants (the experimental group) and from comparison teenagers who met program eligibility criteria but were living in communities that did not offer the Project Redirection program. The comparison communities were pair-matched to the experimental sites on the basis of social and demographic characteristics as well as of the attributes of the service delivery system.†

Comparison teenagers were recruited by means of referrals from other service providers and by word of mouth, procedures analogous to those used to recruit Project Redirection participants. To further enhance the initial similarity between the two groups of young mothers, potential members of the comparison group were first screened to ensure that the two groups would have roughly proportionate representation with regard to age, ethnicity, pregnancy or parenting status, and prior receipt of services.

In the original study design, detailed information was collected through personal interviews with both groups of teenage mothers at three points: baseline (the time of program enrollment), one year later and two years later. A total of 675 teenagers (305 program participants and 370 comparison teenagers) participated in the three rounds of interviews. Second-year interviews were completed with nearly 85 percent of those who had been interviewed at baseline.

For the five-year evaluation, a subsample of the young mothers was studied in 1987, when they were, on average, nearly 22 years of age. Because of budgetary constraints, interviews were restricted to only about half of the original sample (the first half of those originally interviewed), and subjects from Boston and Hartford were not reinterviewed. Thus, for the most recent interview, 327 cases were sought at six sites; a total of 277 women (85 percent) completed the interviews—115 from the experimental groups and 162 from the comparison groups. Analyses relating to attrition suggest that biases due to loss of subjects were quite small and inconsistent in direction.[4]

Three methodological issues merit comment—two relating to the Project Redirection evaluation as a whole and one specific to the five-year follow-up. First, because the research subjects were not randomly assigned to groups, a major concern was that the experimental and the comparison groups might not be sufficiently comparable at the outset of the study. Data from the baseline interviews revealed that the young mothers in the two groups were, as planned, similar in many respects prior to the intervention. For example, the average age in both groups was just over 16, the highest grade completed was ninth, about 45 percent of the teenagers in each group were black and two-thirds of both groups were receiving welfare benefits. Nevertheless, teenagers in the comparison group were substantially more likely to be enrolled in school at baseline than were those who participated in Project Redirection (64 percent vs. 46 percent), and teenagers in the comparison group were more likely to be married (nine percent vs. three percent). These differences suggest that the members of the comparison group may have been somewhat less disadvantaged initially than the young mothers participating in Project Redirection; these baseline differences were statistically controlled for in all analyses.

A second analytic issue is that teenagers in the comparison group were not unserved. Because the study was conducted during a period in which programs for

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*Until recently, there were no large-scale evaluations of a teenage parenting program that used an experimental design. However, two efforts currently under way use random assignment: The first is the Office of Family Assistance Teenager Parent Demonstration, which began operation in Illinois and New Jersey in 1987; the second is the New Chance Demonstration, designed by Manpower Demonstration Research Corporation, which will begin operation in late 1989. Results from both demonstrations will not be available until the early to mid-1990s.

†Boston was matched with Hartford, Connecticut; Harlem was matched with Bedford-Stuyvesant in Brooklyn, New York; Phoenix was matched with San Antonio, Texas; and Riverside, California, was matched with Fresno, California.

**Table 1. Selected measures of economic status, educational attainment, fertility and contraceptive use, by study group; and difference between groups**

| Measure | Redirection (N=115) | Comparison (N=162) | Difference |
|---|---|---|---|
| **Economic status** | | | |
| % who ever held paying job | 87 | 75 | 12** |
| % employed | 34 | 28 | 6 |
| Mean no. of hours worked per week | 13 | 9 | 4* |
| Mean weekly earnings | $ 68 | $ 45 | $ 23 |
| Mean monthly household income | $737 | $756 | $–19 |
| % receving AFDC benefits | 49 | 59 | –10* |
| **Education** | | | |
| % who received diploma or GED certificate | 48 | 48 | 0 |
| % who received ≥1 year of postsecondary education | 13 | 12 | 1 |
| % who completed job-training program in past 3 yrs. | 22 | 19 | 3 |
| % enrolled in school | 19 | 16 | 3 |
| **Fertility** | | | |
| Mean no. of pregnancies | 3.1 | 2.9 | 0.2 |
| Mean no. of abortions | 0.3 | 0.5 | –0.2** |
| Mean no. of live births | 2.4 | 2.0 | 0.4*** |
| **Contraceptive use** | | | |
| % who used a method at last intercourse | 70 | 69 | 1 |
| % who used the pill at last intercourse | 43 | 41 | 2 |
| % sterilized | 12 | 14 | –2 |

*Difference significant at p<0.10.

**Difference significant at p<0.05.

***Difference significant at p<0.01.

Note: In this and subsequent tables, data have been adjusted for differences in ethnicity, school status, age at first birth, number of pregnancies, welfare dependency and employment history, among others.

young mothers were being implemented in most large communities, many of the comparison teenagers actually participated in special teenage parent programs during the course of the evaluation. Thus, the evaluation does not address the question of whether such programs help improve young women's lives, but rather whether the Project Redirection model was more effective than generally available social services.

The third methodological issue concerns the fact that the fifth-year interviews were not conducted with all of the subjects in the original research sample. As a result, differences over time could reflect changes in the sample rather than real trends in the young women's behavior. However, analyses undertaken to examine this issue suggest that differences in baseline characteristics between the fifth-year subsample and the larger original sample were quite small. Moreover, when the second-year outcomes were reanalyzed using only the fifth-year subsample, virtually identical results were obtained as had been found for the entire sample. These and other analyses suggest that the pattern of findings over the five-year period are not biased by the use of a subsample. The major effect of using a subsample appears to be that larger differences between the Project Redirection and comparison groups were needed for them to attain levels of statistical significance.

## The Mothers, Five Years Later

Over the five years since the initial interviews, many aspects of the women's lives had undergone substantial change. At age 22, only about one out of four women were living with their mothers, compared to three out of four at the first interview. Nearly four times as many women were married as had been married at baseline (24 percent vs. six percent); in the majority of cases, the women had married the fathers of their first child. Altogether, about one-third of the women were living with a male partner at the time of the most recent interview.

The percentage of women who had received a diploma or GED certificate had increased from zero at baseline to 48 percent at the fifth-year interview. Only a handful of women were still working on their equivalency certificates. The majority of these women (55 percent) said they planned to return to school at some point, although future educational plans were generally vague.

Employment rates had also increased over the five-year period, from 12 percent at baseline to 31 percent after five years. Over half of the sample (55 percent) had worked for pay at some point in the 12 months prior to the most recent interview. The mean hourly wage of the women who worked was about five dollars. The economic disadvantage of these women persisted, as evidenced by the fact that nearly 30 percent of the sample lived in households with a monthly income of under $500. The average number of household members was 4.4. The majority of women continued to rely on various forms of public assistance, although the percentage of women who were getting AFDC benefits had declined over the years, from 70 percent at baseline to 55 percent five years later. The average monthly income for households getting AFDC benefits was $634, compared to $880 for households not receiving welfare.

The average number of lifetime pregnancies experienced by the young women increased from 1.2 at baseline to 2.9 at the most recent interview, and ranged individually between one and nine. As of the five-year point, the women had given birth to an average of 2.1 children, and about one-third of the sample had had three or more children. Half of the women (52 percent) said that they expected to have no more children, and the great majority (80 percent of those sexually active and not pregnant) said that they were using some method of birth control, typically oral contraceptives. Nearly one-third of the sample reported having had at least one induced abortion.

Being a parent appeared to be an important and rewarding part of most of these women's lives, and only a few regretted that they had had children. Although the majority wished they had waited until their 20s to begin childbearing, most also believed that they were doing fairly well as parents. Their major concern as mothers was that they did not have enough money to provide their children with the things they wanted and needed, including better housing and a better neighborhood environment.

As is indicated in Table 1, which shows five-year results for the experimental and comparison groups after adjustment for the effects of important background characteristics,* there were several differences between the two groups at the most recent interview, particularly with regard to economic outcomes. Significantly more women in Project Redirection than in the comparison group had ever held a paying job (87 percent compared with 75 percent), and somewhat more of the Project Redirection women (34 percent) than comparison women (28 percent) were employed at the five-year point, although this difference did not attain statistical significance.†

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*In Table 1 and all subsequent tables, the group means and percentages have been statistically adjusted for important baseline and background characteristics, such as ethnicity, school status, age at first birth, number of pregnancies, welfare dependency and employment history. These adjustments were made so the two groups would be as comparable as possible, except for participation in Project Redirection.

†It should be noted that significance levels of p<0.10 given in this article are for a two-tailed statistical test, even though a one-tailed test would be appropriate for this evaluation. A significance level of p<0.10 in a two-tailed test is equivalent to a level of p<0.05 in a one-tailed test.

**Table 2. Selected measures of economic status, by study group and number of children**

| Measure | 1–2 children | | ≥3 children | |
|---|---|---|---|---|
| | Redirection (N=72) | Comparison (N=117) | Redirection (N=42) | Comparison (N=45) |
| Mean no. of hours worked per week | 15 | 11 | 10 | 5** |
| Mean weekly earnings | $80 | $54 | $46 | $24*** |
| % employed | 38 | 33 | 28 | 16** |
| % receving AFDC | 44 | 55 | 59 | 70*** |

**Difference significant at p<0.05.

***Difference significant at p<0.01.

However, the Project Redirection women worked significantly more hours per week, on average, than did the comparison group (13 vs. nine hours, including the zero values for the majority of women who were not employed).

Moreover, the former program participants had higher average weekly earnings than did the comparison women ($63 vs. $45 per week, which includes zero values for nonworking women). When nonworking women are excluded from the analysis, the 34 percent of the Project Redirection group who worked earned an average of $200 per week, while the 28 percent of the comparison women who worked averaged $161 per week (not shown). Despite higher average earnings, the program participants had monthly household incomes similar to those of the comparison women, but fewer Project Redirection women were receiving AFDC benefits (49 percent vs. 59 percent). This difference of 10 percentage points presumably is a reflection of the experimental group's greater involvement in the labor force.

The program participants and comparison women were about equally likely to have completed their basic schooling at the five-year point: Just under half of the women in both groups had received a diploma or GED certificate. The groups were also similar in terms of whether they had received any postsecondary education, whether they had completed a job-training program and whether they were currently enrolled in an educational program.

Table 1 also shows that five years after the baseline interview, women in both groups had been pregnant an average of about three times. However, there were differences in the resolution of those pregnancies. Even after the women's pregnancy and abortion histories prior to the baseline interview were controlled for, women in the comparison group had had a significantly higher mean number of abortions five years after baseline than had the Project Redirection women (0.5 vs. 0.3). As a result, the Project Redirection group had a significantly higher average number of live births (2.4) than the comparison group (2.0).

Contraceptive practice appeared to be quite similar in the two groups of young mothers. About 70 percent of both groups of women said that they had practiced some form of contraception at last intercourse: About 40 percent of the sample (and 57 percent of current contraceptive users) said that they had used the pill at last intercourse, and about 13 percent had been sterilized. None of the women in either group had partners who had had a vasectomy.

Since larger family size is generally associated with lower labor-force participation and higher rates of welfare dependency, it was surprising that the Project Redirection participants had, on average, more children but better economic outcomes. Because of this anomaly, further analyses were undertaken to examine the joint effect of program participation on fertility and economic outcomes. The results, summarized in Table 2, indicate that program participants were better employed and more self-sufficient than were the comparison women, regardless of their family size. For example, among the women with 1–2 children, 44 percent of the program participants and 55 percent of the comparison women were receiving AFDC benefits at the five-year point; among those with three or more children, 59 percent of the former Project Redirection participants and 70 percent of the comparison women were receiving AFDC. Regardless of the economic outcome considered, the program mothers with few children fared the best, and the comparison women with more children fared the worst. Having more children lessened the likelihood that mothers in both groups would be working and self-sufficient. Nevertheless, the program appeared to have had positive effects on the economic outcomes of women of all family sizes.

## The Children, Five Years Later

During the fifth-year interviews, information was gathered on the young mothers' parenting behavior and on the development of one of their children (usually the first-born child, who was then, on average, five and one-half years old). The mothers' parental skills were explored by means of the widely used Home Observation for Measurement of the Environment (HOME) scale. The version of HOME used for this study consisted of 55 self-reported and observational items that measured the mother's degree of warmth and acceptance of her child and the extent to which the home environment was stimulating and enriching for the child. The sample as a whole averaged about 42 (out of a maximum possible of 55) points on this scale. As shown in Table 3, the Project Redirection mothers had average scores about four points higher than those of the comparison mothers, a highly significant difference. The differential between the two groups was observed not only for the total scale, but also for most HOME subscales, including those that measure maternal warmth and affection, maternal acceptance and language stimulation in the home (not shown).

**Table 3. Selected measures of parenting skills and child's development, by study group; and difference between groups**

| Measure | Redirection (N=115) | Comparison (N=162) | Difference |
|---|---|---|---|
| Mean score on parenting skills scale | 44 | 40 | 4**** |
| % who enrolled child in Head Start | 47 | 34 | 13** |
| % who breastfed baby† | 50 | 20 | 30**** |
| % of children rated as "very healthy" | 61 | 42 | 19*** |
| % of children who spent ≥ 3 days in hospital since birth | 22 | 32 | –10* |
| Child's mean percentile on vocabulary test | 18 | 9 | 9*** |
| Child's mean score on problem behavior scale | 92 | 105 | –13* |

*Difference significant at p<0.10.

**Difference significant at p<0.05.

***Difference significant at p<0.01.

****Difference significant at p<0.001.

†Among women who were pregnant at the time of the baseline interview.

Two other indicators of positive parental behavior favored the Project Redirection group. First, nearly half of the women who had participated in Project Redirection enrolled their children in the Head Start program, compared to just over one-third of the mothers in the comparison group. Second, program participation was associated with higher rates of breastfeeding: Among the women who were pregnant at the outset of the study, 50 percent of those who had entered Project Redirection breastfed their infants, compared with only 20 percent of the comparison women. This difference is especially dramatic because among the women who were already

**Table 4. Among women who were on AFDC at the time of the baseline interview, selected measures of economic status, parenting skills and child's development, by study group; and difference between groups**

| Measure | Redirection (N=80) | Comparison (N=113) | Difference |
|---|---|---|---|
| % employed | 34 | 24 | 10 |
| Mean no. of hours worked per week | 13 | 8 | 5* |
| Mean no. of weeks worked, last 12 mos. | 16 | 11 | 5** |
| Mean weekly earnings | $76 | $37 | $39*** |
| % receving AFDC benefits at 5 years | 54 | 66 | −12* |
| % receving AFDC benefits within 12 mos. | 57 | 71 | −14** |
| Mean score on parenting skills scale | 44 | 39 | 5**** |
| Child's mean percentile on vocabulary test | 19 | 12 | 7** |
| Child's mean score on problem behavior scale | 93 | 107 | −14** |

*Difference significant at $p<0.10$.

**Difference significant at $p<0.05$.

***Difference significant at $p<0.01$.

****Difference significant at $p<0.001$.

mothers at the time of the baseline survey, levels of breastfeeding among the program participants and the comparison groups were similar (about 25 percent).

The fifth-year interview also included several measures of the child's health and development. First, mothers were asked to rate their child's health on a four-point scale ranging from "not at all healthy" to "very healthy." After the influence of background factors (including the baby's birth weight) was controlled for, the percentage of mothers who rated their child as being very healthy was nearly 20 percentage points higher among Project Redirection participants than among comparison women (61 percent vs. 42 percent). Consistent with this subjective appraisal, significantly fewer of the Project Redirection children (22 percent) than comparison children (32 percent) had spent three or more days in the hospital since their birth.

As a test of their cognitive development, the children's receptive (hearing) vocabulary was measured with the widely used Peabody Picture Vocabulary Test (PPVT). The children of both the program participants and the comparison women had low scores compared with national norms for young children, but the children of Project Redirection participants scored significantly higher than the children of nonparticipants. As the table indicates, the average PPVT score for children of program participants was in the 18th percentile nationally, while that for the comparison children was in the ninth percentile.

Finally, mothers in both groups were asked to rate their children's behavioral problems using a modified version of the Eyberg Child Behavior Inventory. This scale lists 36 types of problem behavior (e.g., "Refuses to obey until threatened with punishment"), each of which was rated by frequency of occurrence on a seven-point scale. The Project Redirection mothers reported significantly less problem behavior than did comparison women: On average, the former cited two to three fewer regularly occurring types of problem behavior than did the latter.*

## Project Impact on Subgroups

The second-year impact analyses revealed that although program effects for the sample as a whole were modest, certain subgroups of young mothers benefited more markedly from participation in Project Redirection—primarily those who had entered the program with the greatest degree of disadvantage (e.g., school dropouts). At the five-year point, subgroup analyses revealed two trends. First, group differences favoring the Project Redirection participants tended to be fairly consistent among different subgroups of young mothers. Second, this consistency notwithstanding, program impact after five years tended to be stronger among certain subgroups—for example, among mothers receiving AFDC benefits at the time of the initial interview and among women with particularly low scores on a PPVT administered to them at the five-year point.

The favorable program effects observed among mothers who had been receiving AFDC at the time of the baseline interview are shown in Table 4. This subgroup, which is currently of considerable public policy interest because of research indicating that such women are at high risk of long-term welfare dependency,[5] constituted about two-thirds of the sample. Project Redirection participants who had been receiving AFDC when they entered the program were not significantly more likely five years later to be employed than were their counterparts, but they were working more hours per week, had worked more weeks in the year prior to the interview and had earned more money. In fact, their average weekly earnings ($76) were more than twice those of the women in the comparison group ($37). They were also less likely to be receiving AFDC at the five-year point (54 percent vs. 66 percent) and were less likely to have received welfare at any time in the 12 months prior to the interview (57 percent vs. 71 percent). Relative to comparison mothers, this subgroup also did well with respect to parenting and child development, as the table indicates.

Overall, women in both study groups had standard PPVT scores that placed them, on average, at about the fifth percentile nationally.† When the sample was divided roughly in half on the basis of their scores, program impacts with regard to economic measures were especially pronounced for the subgroup with the lower vocabulary test scores (not shown). Among women in the subgroup with the lower scores, those who had participated in Project Redirection averaged more than twice as many working hours per week (10 hours vs. five) and had twice the average weekly earnings ($44 vs. $20) as did women in the comparison group. The children of women with poor vocabulary scores also benefited: The average score for the children of program participants is in the ninth percentile nationally, whereas children of comparison women with poor PPVT scores were in the fourth percentile.

Women who had been high school dropouts at baseline were no more likely than those who had not dropped out to have sustained long-term effects of program participation. In general, educational outcomes proved to be least amenable to program influence: In none of the subgroups examined did Project Redirection women attain significantly more years of education than women in the comparison group.

## Conclusions

Because of the quasi-experimental nature of the research design, it is impossible to conclude with certainty that the findings reported here represent true program impacts, but the results are based on strong evidence and are extremely encouraging. The findings suggest that far from being transitory, the effects of participation in a comprehensive teenage parent program focusing on self-sufficiency are far-reaching and diverse. The program had an impact in almost every area examined (education being the major exception), particularly in two subgroups that are of policy relevance in terms of how best to target services.

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*Because of the experimental group's higher rate of enrolling their children in Head Start, we explored whether Head Start participation was accounting for the positive child development results. However, even after Head Start participation was controlled for, significant effects of participation in Project Redirection were sustained on the PPVT and the Eyberg Child Behavior Inventory.

†These percentile rankings are undoubtedly misleading. The PPVT was administered in the women's homes under less than optimal testing conditions. Moreover, the PPVT, like many standardized tests, has been criticized for being culturally biased. Nevertheless, the very low scores do suggest a high level of disadvantage and imply a challenging task for service providers dealing with this population.

In light of the disappointing second-year results, it is important to consider possible explanations for the positive outcomes at the five-year point. First, it should be noted that the most recent analyses studied outcomes that were not measured in earlier interviews. The program had the greatest impact in the areas of parenting skills and child development, areas that had not been examined in previous analyses because the children were too young for their development to be measured easily and reliably during an interview. Parenting education was in fact a very substantial component of Project Redirection, one in which most teenagers participated. It seems plausible that within Project Redirection, the young mothers learned techniques for caring for their infants' physical, cognitive, social and emotional needs, and that improvements in their skills as parents led to improved child health and development.

Most of the economic outcomes for which significant impacts could be detected at the five-year point also had not been measured in earlier rounds. For example, mean weekly earnings and the mean number of hours worked per week were not especially appropriate to study at the second-year interview when, at an average age of 18, few of the young mothers had steady employment. However, employability workshops and career counseling were prominent and distinctive features of the Project Redirection model.

In fact, indications in the second-year evaluation suggest that some of the five-year results relating to employment can be accounted for by earlier program effects. For example, the program participants had held more jobs than the comparison mothers by the time of the second-year interview and were more likely to have worked for pay at some time between the baseline and second-year interviews. At the two-year point, the Project Redirection teenagers were also more likely than comparison teenagers to be looking for work and to have scored higher on a test of their knowledge about the working world, besides receiving higher scores on a measure of self-esteem. Thus, despite the discouraging second-year results (for example, the fact that similar percentages were employed or had obtained a diploma or GED certificate), the Project Redirection teenagers appear to have accumulated more work-related skills, work experience and self-confidence as a result of participating in the program. It seems plausible to conclude that these experiences eventually led to better long-term outcomes in regard to employment and self-sufficiency.

A final possible explanation for the pattern of results over the five years of the evaluation is that at the most recent interview, the young mothers may have been at a better point to "get on with their lives." Frank Furstenberg's longitudinal study of young mothers in Baltimore suggests that the teenage years may be a particularly turbulent time for the disadvantaged young women who become mothers.[6] Perhaps Project Redirection served as a positive bridge between adolescence and adulthood, providing participants with some of the skills and motivations essential in progressing toward self-sufficiency—attributes on which they could not fully capitalize until they were somewhat older.

Overall, then, these five-year findings provide the strongest evidence yet available that comprehensive programs for young mothers can have positive long-term effects for both the mothers and their children. They also suggest the desirability of including both parenting instruction and employment-related services as core components in comprehensive programs.

Despite the generally positive results, however, the analyses indicate areas for improvement, notably in education and family planning. The programs appear to have had particular difficulty in engaging their clients educationally. Of course, by the time these young women had entered Project Redirection, many had had negative experiences with schooling, having repeated grades or dropped out even prior to their pregnancy. Consequently, many were not enthusiastic about returning to regular public school, yet few acceptable alternatives were available for these very young women.

Program staff members repeatedly emphasized the importance of finishing school, but it may have been difficult to compete with the rewards the teenagers derived from being parents. Their babies gave them immediate satisfaction and purpose, as well as "someone to love" and play with. In fact, the rewards of motherhood may also have made them less receptive to the program's family planning messages. Early repeat pregnancies were common, and all but a few of these women had two or more children by their early 20s.

It might also be that participation in the program had an effect on the young mothers' willingness to seek a subsequent abortion. That is, in an environment where nurturing and vigilant maternal behavior were encouraged and where babies were given a lot of love and attention, the young women's interest in terminating an unintended pregnancy could have been dampened. This might account for the finding that at the final interview, the program participants and comparison mothers had similar pregnancy rates but different rates of abortion and live birth, even though they were similar with respect to all three at the time of the baseline interview.

The larger number of children born to the Project Redirection participants could also reflect the failure of the family planning component. The approach taken by program staff in the Project Redirection sites was generally "low-key," one that reflected (at least in part) the discomfort of some staff members about discussing issues relating to sexuality. Such an approach appears to have been insufficient to motivate the participants to use effective contraceptives regularly. The findings of this study suggest that family planning must be promoted strongly and continuously within comprehensive teenage parent programs. The pattern of findings in Table 2 clearly suggest that if the Redirection group had been more successful in avoiding higher order pregnancies, the differences between the experimental and comparison groups with respect to economic outcomes would have been even more powerful.

Despite the encouraging results indicating that participation in Project Redirection resulted in improved outcomes, the absolute level of disadvantage in this group remained high. At the five-year point, the majority of mothers in the Project Redirection group were unemployed (although most expressed a desire for a job), had not yet obtained their diplomas or GED certificates and had received welfare at some point in the previous year. Moreover, although the Project Redirection participants had better employment outcomes, they were no less likely than the comparison women to be living in poverty.

These results suggest that additional interventions with this population are needed to help them improve their skills, complete their basic schooling and obtain the training needed to acquire jobs that pay a decent wage and offer fringe benefits. Although all of the Project Redirection

*(Continued on page 187)*

# What Price Prematurity?

*By Rachel M. Schwartz*

## Summary

Data from a 1985 stratified sample of urban hospitals with neonatal intensive care units show that over half of the low-birth-weight infants in the United States are cared for in such centers. A cost analysis focusing on all infants who survive and go home from these hospitals revealed that those weighing from 500–2,500 g represent nine percent of the neonatal patient load, but consume 57 percent of the cost of their hospital care. Similarly, neonates in the 500–1,499 g range account for 1.6 percent of the infants cared for and over one-third of related costs in these urban facilities.

If only 20 percent of infants moved from one birth-weight group (in 250 g intervals) to the next, this upward shift would result in an immediate savings of $70–$95 million. Estimates based on the published literature indicate that the programmatic expenditures for prenatal care needed to cause this shift would be $9–$28 million less than these immediate savings.

## Background

Improvements in the technology of neonatal care have resulted in more extensive treatment and often the survival of smaller and smaller neonates. It is widely understood that this care is expensive, and researchers have asked the policy-relevant question: Could this money be better spent on prevention?

But the analyses addressing the issue have not been broad-based and have tended to include long-term costs that occur after the initial hospitalization, factors that have often made the analyses unconvincing to policymakers. The most extensive prior study of this issue is that completed by the Institute of Medicine for their report *Preventing Low Birthweight*.[1] To estimate the cost savings that could be realized through prevention, their calculations focused on medically indigent women as the primary high-risk target. More recently, the Office of Technology Assessment (OTA)[2] also estimated the cost-effectiveness of prenatal care and focused on the medically indigent as the target. While the medically indigent are the most underserved and from a policy perspective, are a clearly defined population, focusing only on the indigent and including sizable long-term costs limits the usefulness, in policy and political terms, of these otherwise valuable studies.

The current study focuses on immediate in-hospital costs and is neither race-specific nor class-specific. It looks at a sample of infants representing over one-third of all urban births in the United States during 1985; it quantifies the cost of hospital care for low-birth-weight infants and identifies the magnitude of the immediate savings of in-hospital costs that could result from a small shift in the birth-weight distribution.

As the Institute of Medicine report clearly points out, a variety of risk factors lead to low birth weight, including the mother's health prior to pregnancy, medical conditions during pregnancy, behavioral factors and environmental conditions. Multivariate analysis has shown that even when population characteristics are well controlled for, medical factors are prominent components of poor outcome.[3] Predicting who will have a premature infant is not easy, but there is evidence indicating that screening for risk can identify women likely to give birth prematurely.[4]

Assuming that high-risk women can be identified through the use of risk screening tools that examine socioeconomic, medical and behavioral risk factors, the analysis estimates the cost of the risk screening and prenatal care needed to improve the birth-weight distribution. The conditions under which prenatal care could pay for itself are discussed.

## Methods

The data used in this analysis are based upon results from 28 perinatal centers that participated in a national study of the impact of Diagnosis Related Groups on Perinatal Regionalization.[5] Initially, all hospitals in the continental United States providing tertiary neonatal care were identified using the 1983 American Hospital Association data tapes (the most recent tapes available at the time). Hospitals were considered to provide tertiary care if they had a neonatal intensive care unit, retained all neonates who required treatment (with the exception of surgical cases) and had at least one full-time neonatologist on staff. A state-by-state listing of all such hospitals was created, and the directors of state maternal and child health programs were asked to update this list to reflect 1985 status. The final list included 385 tertiary perinatal centers in the United States excluding military hospitals and the 39 children's hospitals with neonatal intensive care units. Because large urban hospitals were the subject of the study, another 25 hospitals with fewer than 900 births per year were dropped prior to sampling.

The remaining 360 hospitals were stratified into 14 equal cells, based upon beds and teaching intensity (residents per bed). Two hospitals were randomly selected from each cell and enrolled in the study. A bias analysis was performed to compare the 28 study participants to nonparticipants and no differences were detected. In addition, no significant differences were identified between the sample and the universe of tertiary hospitals (t-test of

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**Table 1. Number of infants, average cost of care and average hospital stay (in days), by birth weight, according to discharge status; and percentage distribution of infants**

| Category and birth weight | Total | Home | Died | Transferred | Other |
|---|---|---|---|---|---|
| NUMBER | | | | | |
| **All** | **80,282** | **77,491** | **821** | **746** | **1,224** |
| 500–749 | 384 | 90 | 273 | 14 | 7 |
| 750–999 | 531 | 274 | 163 | 41 | 53 |
| 1,000–1,249 | 577 | 351 | 84 | 73 | 69 |
| 1,250–1,499 | 701 | 487 | 40 | 93 | 81 |
| 1,500–1,999 | 2,121 | 1,636 | 61 | 211 | 213 |
| 2,000–2,499 | 4,622 | 4,275 | 49 | 104 | 194 |
| ≥2,500 | 71,346 | 70,378 | 151 | 210 | 607 |
| AVERAGE COST | | | | | |
| **All** | **$ 1,701** | **$ 1,449** | **$ 9,614** | **$ 8,577** | **$ 8,195** |
| 500–749 | 22,782 | 64,161 | 7,090 | 35,962 | 76,393 |
| 750–999 | 33,206 | 45,336 | 12,434 | 30,918 | 36,148 |
| 1,000–1,249 | 24,803 | 28,486 | 15,412 | 16,090 | 26,722 |
| 1,250–1,499 | 17,459 | 19,497 | 10,036 | 10,202 | 17,209 |
| 1,500–1,999 | 9,157 | 9,695 | 9,549 | 5,532 | 8,502 |
| 2,000–2,499 | 2,821 | 2,568 | 5,435 | 4,897 | 6,618 |
| ≥2,500 | 718 | 678 | 9,179 | 3,940 | 2,054 |
| AVERAGE STAY | | | | | |
| **All** | **5.3** | **5.0** | **11.7** | **14.9** | **15.2** |
| 500–749 | 33.4 | 101.7 | 8.7 | 50.3 | 86.1 |
| 750–999 | 53.0 | 76.0 | 14.8 | 48.2 | 54.8 |
| 1,000–1,249 | 47.7 | 58.8 | 18.2 | 28.4 | 47.3 |
| 1,250–1,499 | 35.9 | 41.7 | 14.6 | 19.5 | 30.5 |
| 1,500–1,999 | 20.5 | 22.5 | 12.1 | 10.6 | 17.2 |
| 2,000–2,499 | 7.5 | 7.2 | 4.9 | 10.0 | 13.0 |
| ≥2,500 | 3.5 | 3.5 | 11.2 | 5.9 | 5.2 |
| PERCENT | | | | | |
| **All** | **100.0** | **96.5** | **1.0** | **0.9** | **1.5** |
| 500–749 | 100.0 | 23.4 | 71.1 | 3.7 | 1.8 |
| 750–999 | 100.0 | 51.6 | 30.7 | 7.7 | 10.0 |
| 1,000–1,249 | 100.0 | 60.8 | 14.6 | 12.7 | 12.0 |
| 1,250–1,499 | 100.0 | 69.5 | 5.7 | 13.3 | 11.6 |
| 1,500–1,999 | 100.0 | 77.1 | 2.9 | 10.0 | 10.0 |
| 2,000–2,499 | 100.0 | 92.5 | 1.1 | 2.3 | 4.2 |
| ≥2,500 | 100.0 | 98.6 | 0.2 | 0.3 | 0.9 |

means); therefore, we believe that the study hospitals and the infants cared for in these hospitals are generalizable to the 360 urban tertiary hospitals in the United States.

In 1985, the 360 tertiary hospitals represented 16 percent of all urban, obstetric hospitals in the United States, yet they encompassed 38 percent of all births at these hospitals.* They also cared for a disproportionate share of births under 2,500 g. There were 223,196 low-birth-weight infants born in the United States in 1985;† of these, 120,331 or 54 percent were cared for‡ in the 360 tertiary hospitals from which the sample was drawn. So, although the 28 hospitals represent only 16 percent of the total of urban tertiary hospitals, they provide us with information documenting the cost of acute care for 54 percent of low-birth-weight infants in the United States.

Over a year's time, 88,645 infants received care in the 28 hospitals between birth and 28 days postpartum; each hospital provided data for a 12-month period including all or part of 1985. Of these infants, 8,165 were excluded from the study because birth-weight information was missing. Compared with those for whom birth-weight data were available, these infants were likely to have a longer hospital stay (12 days vs. five days), a higher average cost for treatment ($5,751 vs. $1,449) and a higher death rate (five percent vs. one percent). In addition, roughly twice as many of the neonates without a recorded birth weight were classified as premature infants. For purposes of this analysis, it is assumed that these cases are found disproportionately in lower birth-weight categories. As a result, analyses of the impact of shifts in birth-weight distribution are conservative, since data that would include these unrecorded cases would shift greater numbers from low-birth-weight categories to higher (less costly) categories.

Also excluded from the analysis were 198 infants with birth weights of less than 500 g. These infants have a death rate of almost 100 percent. The impact that the inclusion of these infants would have on the cost of care is discussed below.

Data on 80,282 neonates were used for this analysis, 11 percent of whom weighed less than 2,500 g. This figure is higher than the national average of six percent[6] because tertiary hospitals serve as magnets for cases identified as high-risk. The hospitals provided clinical and financial data on all neonates and their mothers. The financial data were provided in the form of charges (the amount billed to a patient for hospital services), in 11 separate categories.

Because charges are not set uniformly and payers (insurers or Medicaid) often receive discounts, all patient charges were converted to costs for this analysis to ensure comparability and internal consistency. All hospitals must report their costs to the Health Care Financing Administration using the Medicare Cost Reports, the only standardized hospital cost reporting form. Comparable costs for each hospital were developed by reviewing each Medical Cost Report and calculating per diem average costs (for routine, special, neonatal, pediatric intensive and adult intensive care) and ratios of costs to charges (for lab, X-ray, pharmacy, surgery, labor and delivery and other services). Days in each unit per patient were multiplied by the calculated per diems, and charges for each type of service were multiplied by the ratio of costs to charges. The new cost variables were then summed to create total cost for each patient.

The costs presented in this analysis represent cost of care exclusive of direct medical education and capital expense—expenses that are not related to individual patient's resource consumption. As a result, any savings projected in our analysis

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*Based on an analysis of American Hospital Association data tapes for births in urban obstetric hospitals.

†Figures for 1980 (see reference 7) inflated for1985.

‡Tertiary hospitals accept patient transfers; about seven percent of infants cared for in tertiary centers are actually born in nontertiary hospitals and transferred to these facilities.

**Table 2. Calculation of costs for inpatient hospital care among neonates who went home and percentage distribution of total costs, by birth weight**

| Birth weight | % of patients | Number | Average cost per patient | Total estimated cost | % distribution |
|---|---|---|---|---|---|
| **All** | **100.0** | **1,094,260*** | **$ 1,449** | **$1,585,448,343** | **100.0** |
| ≤2,500 | 9.2 | 100,444 | 9,072 | 911,223,389 | 57.5 |
| 500–749 | 0.1 | 1,271 | 64,161 | 81,542,199 | 5.1 |
| 750–999 | 0.4 | 3,869 | 45,336 | 175,413,039 | 11.1 |
| 1,000–1,249 | 0.5 | 4,957 | 28,486 | 141,192,212 | 8.9 |
| 1,250–1,499 | 0.6 | 6,877 | 19,497 | 134,079,108 | 8.5 |
| 1,500–1,999 | 2.1 | 23,102 | 9,695 | 223,966,878 | 14.1 |
| 2,000–2,499 | 5.5 | 60,368 | 2,568 | 155,029,954 | 9.8 |
| ≥2,500 | 90.8 | 993,816 | 678 | 674,224,954 | 42.5 |

*Estimated number of neonates served in 360 tertiary care facilities who went directly home, 1985.

are conservative. They are also more realistic because capital and medical education costs relate to the entire institution, not to the cost of care for any particular patient. Because some hospitals provided fiscal 1985 data, with different starting months, all cost figures were adjusted to 1985 dollars using standardized adjustment techniques.

### Cost Analyses

The distribution of infants in Table 1 (page 171) reveals that about 97 percent of neonates went home, one percent died and almost two and one-half percent had some other outcome. Infants who were transferred went to another hospital; those falling under "other" were sent to a rehabilitation facility, were discharged to home nursing care or had an unknown discharge status. Neither group is the primary focus of this analysis because their total cost and length of stay across all providers of care are unknown, although the available data on these infants indicate that they more closely resemble those who went home than those who died.

The distribution of low-birth-weight infants according to discharge status reveals death rates of 71 percent, 31 percent and 10 percent for weights of 500–749 g, 750–999 g and 1,000–1,499 g, respectively. These rates are similar to those reported in an extensive summary by the OTA, in which the comparable rates were 67 percent, 34 percent and 12 percent, respectively.[7] While the OTA findings were over multiple years and multiple studies, the comparability supports the relative accuracy of the death rate data.

The first analysis performed focuses on identifying the difference in cost per infant by discharge status. As Table 1 shows, the cost per neonate is inversely related to weight for infants who went home, but that relationship is not present among those who died. The OTA report demonstrated similar relationships between cost and length of stay by weight.[8] However, the figures shown in Table 1 are more generalizable than those published previously owing to the broad-based random sample of hospitals from which these data are drawn.

The average cost for the 90 neonatal patients with birth weights of 500–749 g who went home was nine times as expensive as for the 273 who died. The 750–999 g weight group had an average cost per infant who lived of $45,336, with an average of $12,434 for those who died. The cost for those who died in this birth-weight group was higher than that in the lighter weight group, but the death rate was dramatically lower. While the death rate was 71 percent in the 500–750 g group, it dropped to 31 percent in the 750–999 g weight group.

**Table 3. Calculation of savings created by a 20 percent upward shift of low-birth-weight neonates into the next birth weight category, by birth weight**

| Birth weight | Number* | Cost per infant |  | Savings per infant | Total savings |
|---|---|---|---|---|---|
|  |  | Old | New |  |  |
| **All** | **20,089** | **9,072** | **4,295** | **4,777** | **$95,967,678** |
| 500–749 | 254 | 64,161 | 45,335 | 18,826 | 4,785,551 |
| 750–999 | 774 | 45,336 | 28,486 | 16,850 | 13,038,437 |
| 1,000–1,249 | 991 | 28,486 | 19,496 | 8,990 | 8,912,874 |
| 1,250–1,499 | 1,375 | 19,497 | 9,694 | 9,803 | 13,482,744 |
| 1,500–1,999 | 4,620 | 9,695 | 2,568 | 7,127 | 32,927,881 |
| 2,000–2,499 | 12,074 | 2,568 | 678 | 1,890 | 22,820,191 |

*Twenty percent of the number shown in Table 2.

The length-of-stay analysis supports the data on average cost per neonate. Length of stay drops dramatically as birth weight increases for those who went home. Here again, the pattern for those who died is less clear. Infants who were transferred show the same patterns as those who went home, but the length of stay reveals that care elsewhere could easily bring the cost of treatment for these infants up to the birth-weight specific averages shown for those who went home.

Because the 28 hospitals and 80,282 neonates who received care are a representative sample of all urban tertiary hospitals (excluding children's hospitals), the data can be used confidently to calculate cost estimates for the 53 percent of low-birth-weight infants (1,133,714 neonates) cared for by the universe of 360 tertiary centers from which the sample was drawn. Table 2 shows the calculations of cost estimates for the 97 percent of infants whom our study found went home.

Most striking is the relationship between the volume of cases and the total costs. Low-birth-weight infants (those weighing less than 2,500 g) represent only nine percent of neonates who went home; however, they cost $911,223,389 per year to care for or 57 percent of the total acute inpatient cost for all infants. The figures also show that infants weighing 500–1,499 g represent 1.6 percent of cases but the proportion of costs—34 percent—is 21 times that of the frequency of cases. Similarly, patients weighing 750–999 g represent costs in excess of 33 times their frequency.

### Cost Savings

Table 3 shows the savings that would accrue if only 20 percent of the cases in each birth-weight category were to move into the next category. The "old cost" at the current birth weight serves as the baseline cost for each infant, and the "new cost" is the cost of the next birth-weight group. The savings for each patient is the difference.

The projected shifts within the birth-weight groups would result in a total savings of $95,967,678 for all low-birth-weight categories. The 1.6 percent of infants under 1,500 g would account for $40,219,606 or 42 percent of the total savings.

The prevention and treatment effort required to create improved birth weight may also save the lives of some infants. As noted previously, the hospital costs for infants weighing less than 2,000 g who live are higher than for infants who die. To further ensure that savings are estimated conservatively, we show in Table 4 the projected increase in cost if five percent of neonates who now die were to survive and go home. Even this small shift would result in an increase in cost of $14,252,708. Overall savings from the increase in birth weight would be reduced by 15 percent, but the immediate savings would still be $81,724,271. Infants weighing under 500 g were excluded from this study, but if five percent of these infants were to survive, a sensitivity analysis revealed that immediate savings would be reduced to $72,581,973 (not shown).

**Table 4. Calculation of increased cost created if an additional five percent of neonates in each low-birth-weight category survive**

| Birth weight | No.* | Cost per infant | | Increase per infant | Total increase | x 12.79† | Net savings‡ |
|---|---|---|---|---|---|---|---|
| | | Old | New | | | | |
| **All** | **34** | **$9,712** | **$42,977** | **$33,265** | **$1,114,363** | **$14,252,708** | **$81,724,271** |
| 500–749 | 14 | 7,090 | 64,161 | 57,071 | 779,019 | 9,963,655 | –5,178,340 |
| 750–999 | 8 | 12,434 | 45,336 | 32,902 | 268,151 | 3,429,655 | 9,623,577 |
| 1,000-1,249 | 4 | 15,412 | 28,486 | 13,074 | 54,911 | 702,309 | 8,210,277 |
| 1,250–1,499 | 2 | 10,036 | 19,497 | 9,461 | 18,922 | 242,012 | 13,239,659 |
| 1,500–1,999 | 3 | 9,549 | 9,675 | 126 | 384 | 4,915 | 32,920,055 |
| 2,000–2,499 | 2 | 5,435 | 2,568 | –2,867 | –7,024 | –89,839 | 22,908,943 |

*Five percent of number of deaths shown in Table 1.

†1,133,714 births in the population is 12.79 times larger than the 88,645 in the patient sample.

‡Previous column subtracted from total savings column in Table 3.

## Expenditures for Care

If roughly $80 million could be saved by shifting the low-birth-weight distribution by 20 percent, what must be spent to achieve these savings? If the necessary prenatal care were to cost less than $80 million, prenatal care would pay for itself in terms of initial hospital costs alone.

Robert Creasy and colleagues found that screening can potentially identify as many as two-thirds of preterm births;[9] approximately two-thirds of all low-birth-weight babies are preterm.[10] They note that the screening itself requires very limited resources—two to three minutes at the initial visit and at 26 or 28 weeks—and that just roughly one-tenth of all those screened would need to be followed up. Programmatic costs for screening and the cost of extra prenatal care for the high-risk cases identified, however, are substantial.

In performing an analysis of these costs, it was assumed that all women delivering at tertiary perinatal centers would be screened at a cost of either $10 or $20 per patient;* that 10 percent of patients would be identified as high-risk; and that all high-risk patients would receive an enriched program of care, varying in cost from an average of $400 to $480 per patient.† If 1,025,301 women delivered at the 360 urban hospitals represented in this study,‡ 102,530 could be expected to be identified at screening as high-risk. Table 5 presents both low and high estimates for the cost of screening all the women who delivered and of providing the additional care required to those at high risk.

The cost of care estimates presented here may be high because some portion of these women may already be receiving high-risk care. However, if these costs are subtracted from the earlier estimated savings of $81,724,271 due to improved birth weight, there would still be a savings of $9–$28 million despite potential overestimates. In addition, as noted throughout this discussion, these are the immediate savings. Shifts in birth weight will also result in intermediate and long-term savings.

## Discussion

We have shown that a 20 percent shift of cases from each birth-weight category to the next would result in short-term savings of $73–$96 million, depending on whether improved death rates are expected. Several questions arise from this analysis. First, are these real cost savings or are they at the margin? Or, are costs fixed such that the projected savings would not actually be realized? Is a 20 percent movement of cases in eight ounce (250 g) or one pound (500 g) increments feasible?

Savings resulting from what is essentially a preventive strategy are always viewed skeptically. However, in this case much is known about the true cost of care. The baseline analysis eliminated two high-cost factors not directly related to care—direct medical education and capital costs. Further, the savings presented result solely from the difference between two weight groups. It is demonstrated that care would be costly, but not as costly as at lower weights. The data on the length of hospital stay show that days drop dramatically within weight groups. Shortened lengths of stay mean fewer hospital days are billed by the hospitals or paid by third parties or patients.

**Table 5. Estimates of the costs of screening for high-risk pregnancies and providing the required prenatal care, and estimates of the resultant savings**

| Type of expenditure | Low estimate* | High estimate† |
|---|---|---|
| **Total cost** | **$53,934,130** | **$72,729,753** |
| Incremental cost of inadequate prenatal care ($380 x 7,024)‡ | 2,669,120 | 2,669,120 |
| Cost of screening all patients | 10,253,010 | 20,506,020 |
| Cost of high-risk care | 41,012,000 | 49,554,613 |
| **Net savings (costs subtracted from $81,724,271)** | **27,790,341** | **8,994,718** |

*Assumes $10 per patient for screening and $400 per high-risk patient for prenatal care.

†Assumes $20 per patient for screening and $480 per high-risk patient for care.

‡The figure of $380, taken from reference 2, is used as the estimate of the cost of baseline prenatal care for those high-risk women who would not have received such care if they had not been identified through screening. The number of women who would require this additional care (7,024) was obtained by dividing the number of high-risk women (102,530) into racial categories and multiplying by the rate of inadequate care for each race. The race distribution in the hospital sample was 58.3 percent white and 41.7 percent nonwhite; 4.6 percent of whites get inadequate care, as do 10 percent of blacks. Nonwhites were assumed to have the same rate of care as blacks. Thus, 102,530 x 58.3% x 4.6 % = 2,749; 102,530 x 41.7% x 10.0% = 4,275; 2,749 + 4,275 = 7,024.

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*$10 per patient is based on using an average of one full-time practical nurse or equivalent at $28,480 annually per facility (including fringe benefits) to perform the screening; $20 per patient if two full-time nurses are needed at each facility.

†This is the additional cost in 1985 dollars of perinatal care beyond what is routinely provided. Cost estimates are based on data on physicians prenatal visits from the 1980 National Medical Care Utilization and Expenditures Survey, inflated to 1985 and adjusted to cost using a ratio of cost to charges of 0.75. The ancillary costs are based on figures from The Alan Guttmacher Institute, *The Financing of Maternity Care in the United States*, New York, 1987, and on additional input from the Rite Start program in Rhode Island. The $400 includes five additional prenatal visits at $45 per visit and $175 for ancillary services. The $480 includes six additional visits and $210 for ancillary services.

‡The 360 hospitals in the analysis delivered 1,025,301 infants; the remaining infants were born elsewhere and the mothers would not be cared for at these hospitals. We assumed one mother for each infant, which may be an overestimate of about 1.2 percent due to multiple births.

A source of potential error would be if hospitals were to raise per diem costs and ancillary charges to reflect the declining occupancy, thus usurping the savings and passing them on as costs in the form of higher charges. This seems unlikely because for very low birth weight infants, much of the cost pays for high staffing ratios and is not integral to hospital operations. Changes in volume would logically result in declining nursing and support-staff requirements.

Finally, the analysis only focuses on the immediate savings that would occur in acute care. The morbidity associated with low birth weight and cost incurred after discharge has been documented by numerous researchers. One OTA estimate for moderate to long-term cost per low-birth-weight infant is $9,800. Presumably, these costs also vary by birth-weight categories, with very low birth weight infants requiring more intensive posthospitalization resources. As a result, the savings for care beyond the neonatal period, if included, would increase the figures presented here.

Because this paper focuses on the cost savings that can be achieved from a shift in neonatal birth weight, we believe it is appropriate to ask whether the published literature indicates that such an improvement is achievable. Much is known concerning the factors that increase the risk of low birth weight and premature labor. However, both knowing the cause of poor outcomes and having the technology, skills and knowledge to be able to have an impact are required. The Institute of Medicine exhaustively reviewed the literature on risk factors associated with low birth weight and prematurity.[11] These can be characterized as social, demographic, medical and behavioral. In that review, a number of prominent findings emerged: the relative importance of socioeconomic factors including race (black) and age (<17 years old) and the wide variety of known medical risk factors (both preexisting and occurring during the current pregnancy).

Race and socioeconomic status alone elevate risk, but recently there have been indications that when medical and socioeconomic risk are controlled for adequately, race disappears as a predictor of outcome.[12] Such a finding implies that while race is a good targeting approach, medical and health problems are at the heart of a poor outcome. This finding points more directly to potential improvements that could be realized by risk screening and focusing appropriate care.

Risk screening and risk-appropriate care are central to the Institute of Medicine recommendations. As previously noted, impressive results have been achieved by Creasy and colleagues.[13] Others have also developed and used extensive risk-scoring systems that predict a large percentage of perinatal mortality and morbidity.[14]

While identification of high-risk patients is important, the effectiveness of the prenatal care itself is at the heart of the current debate. All studies of efficacy have methodological problems because of the difficulties of implementing randomized trials; nonetheless, many programs aimed at reducing the number of poor outcomes suggest positive results. The March of Dimes Multi-Center Prevention of Pre-Term Delivery Program located at the University of California at San Francisco found that 93 percent of high-risk patients and 79 percent of low-risk patients who went into preterm labor were candidates for preventive treatment; over a five-year period, the program reduced the preterm delivery rate by 48 percent.[15] A French program with similar objectives reduced the proportion of preterm births by 41 percent.[16] Each of these programs has strong risk-screening and treatment elements. The California OB Access Project experienced a 34 percent drop in low birth weight through augmented care.[17] In a review of the literature, the OTA found 25 studies that scrutinized the effectiveness of augmented prenatal care services, 15 of which had a positive impact on birth outcomes.[18]

If we accept the majority of the published literature, not only is prevention possible, but success rates such as those modeled in the analysis can be achieved. The $81,724,271 savings reflects a 20 percent upward shift in birth weight in each category. This represents a reduction in the low-birth-weight rate in the study hospitals from nine percent of infants who went home to eight percent—an 11 percent decline in low birth weight. If low birth weight can be reduced by 30–50 percent in targeted high-risk populations through augmented care, then an overall reduction of 11 percent seems possible.

These analyses reveal that neonatal care for low-birth-weight babies is so costly that a small shift in the distribution of cases among birth-weight categories can result in substantial immediate savings, even after the costs for the additional prenatal care required are taken into account. The policy implications of this analysis indicate that the United States can afford a broad-based high-risk strategy. It would pay for itself.

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**16.** Ibid.

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# Pregnancy and Childbirth: Risk Factors for Homelessness?

*By Beth C. Weitzman*

## Summary

A comparison of 704 homeless public assistance families in New York City with 524 families on public assistance who had housing found that pregnancy and recent births were highly correlated with becoming homeless. Thirty-five percent of homeless women were pregnant at the time of the interview, and 26 percent had given birth in the past year, compared with six percent and 11 percent, respectively, of women in the housed sample. In addition, having a baby before age 18 (as had 37 percent of the homeless women and 24 percent of the housed women) was significantly related to homelessness but family size was not.

## Background

Homelessness has become one of the most dramatic and visible problems facing the United States. Throughout much of the country, those in need of housing have spilled out onto the streets and parks of both cities and suburbs and into publicly and privately sponsored emergency shelters. The growing plight of the homeless is made even more compelling by a surge in the number of homeless families. In a recent survey of 25 American cities, it was estimated that 28 percent of the homeless were families with children.[1] Yet despite the prevalence of this problem, relatively little is known about those families who are homeless and about the factors that lead to homelessness.

Many studies have documented the strong correlation of early pregnancy with female poverty.[2] Similarly, women who gave birth as teenagers are far more likely to be receiving public assistance than are those who delayed their first birth.[3] However, it does not appear that teenage pregnancy has a direct effect on either poverty or welfare dependence. Rather, early childbearing is associated with low educational attainment and increased family size, which in turn increase the risk of poverty or welfare dependence.[4]

Despite the problems faced by many young women as a result of early motherhood and large family size, there has been surprisingly little attention given to the role played by pregnancy and family size in placing families at risk of homelessness. For instance, women who were teenage mothers might have a hard time finding housing initially. Furthermore, the economic, physical and emotional stress of additional pregnancies might add to the risk of homelessness faced by poor women, and the difficulties inherent in finding affordable housing are multiplied for large families.

## Methodology

This article explores the relationships between homelessness and two factors—pregnancy and the number of children. The data were gathered in interviews conducted during the first six months of 1988 as part of a larger study of homeless families in New York City. The full study examines a vast array of family characteristics that may contribute to homelessness, including housing histories, social support networks, welfare and work experiences, and physical and mental health. The purpose of the present study is to develop a model to identify early on those public assistance families at greatest risk of homelessness. Such a model might suggest policy options that could prevent at-risk families from becoming homeless.

Unlike other parts of the country (most notably the Southwest), the families who become homeless in New York City's limited housing market tend to be young, female-headed and public assistance recipients.[5] Families needing emergency housing are placed by the city's Human Resources Administration in city-run shelters, welfare hotels or facilities provided by voluntary agencies. In 1986, the Human Resources Administration started identifying families at risk of homelessness through use of the agency's own administrative records. New York University's (NYU) Graduate School of Public Administration was selected to expand on the agency's earlier work by supplementing existing data with data from interviews with families potentially at risk. Researchers at the school thus directed a survey of 704 public assistance families requesting emergency shelter from the city and from 524 families receiving public assistance but not in need of emergency shelter. The interviews for the survey were conducted by Louis Harris and Associates in both English and Spanish.

For the homeless sample, data were collected from families requesting shelter at the city's Emergency Assistance Units; interviewers screened the heads of families while they waited for assistance. Families were eligible for inclusion in the sample only if they were either currently on public assistance or had been during the last six months; they had not been in a shelter for at least 31 days; and they included children (or a pregnant woman) at the time of their request for shelter. These requirements ensured that the sample was made up solely of public assistance families who were newly homeless. Overall, 6,526 families were screened; a substantial majority of them had been in shelters at some time during the last month. Of the 972 families

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Beth C. Weitzman is an assistant professor at the New York University Graduate School of Public Administration. The data for this research were gathered under a contract from New York City's Human Resources Administration to New York University's Urban Research Center. James Knickman and Beth Shinn of New York University shared in the creation and implementation of the full study and provided input into the work on which this article is based. Arthur Blank and Gordon Berlin of the Human Resources Administration provided thoughtful comments and Ellen Marcus, a research assistant, helped with tables and graphs.

who met the eligibility requirements (15 percent of those screened), 704 (72 percent) interviews were completed.

Families in the comparison group were selected on the basis of a stratified random sample. Twelve of the city's 40 public assistance centers were randomly selected for inclusion in the study with sampling probability proportionate to size. Heads of families were interviewed at mandatory recertification appointments scheduled several times each year. The scheduled appointments were used to ensure an unbiased selection of families for inclusion in the study. A quota of approximately 35 interviews per center was established and families were randomly selected from among those seen by 12 public assistance employees who were randomly selected.

Using the method described above, a total of 745 families scheduled for their recertification appointments were selected for the study; of these, 524 agreed to participate, yielding an overall response rate of 70 percent. (These figures include 36 families who did not show up for their original appointment and who were interviewed either during their rescheduled appointment or by phone.) The 524 respondents included an oversample of 76 black families who were added to the original sample because it did not include a sufficient number of blacks to permit subgroup analyses.

Ninety-five percent of the heads of families interviewed were women. Preliminary analyses of the interview data show that the homeless mothers were considerably younger than were those mothers who had housing: Among the homeless, 44 percent were 25 years old or younger and only four percent were over age 40; comparable proportions among those housed were 17 percent and 26 percent, respectively. Homeless families were likely to have lived with relatives or friends for a period prior to seeking housing assistance: Only 36 percent of the homeless families reported having spent most of the last year in their own apartment, compared with 86 percent of the housed families. The overwhelming majority of both the homeless and housed families on public assistance in New York City are from minority groups.[*]

The survey data used in this analysis included information on birth histories and the number of children living with the family.[†] These responses are self-reported and, therefore, subject to the limitations of recall and candor that typify such information. For each pregnancy and parenting factor studied, percentage distributions were obtained for both the homeless and housed samples. The probabilities of risk of homelessness associated with some of these factors were estimated on the basis of a weighting schema that adjusted for the overrepresentation of homeless families inherent in this study's "choice-based" sampling strategy. That is, the sample was chosen based on whether or not a family was seeking emergency housing. Given this bias, probabilities of homelessness could not be computed for the total population of public assistance families based on the raw data from our sample. Fifty-nine percent of the overall sample were homeless, while approximately three percent of the general public assistance population seek emergency housing during a given year.[‡]

To properly adjust the findings for use in a forecasting model, the data for each family were weighted to reflect the actual probability that the family would have been selected for the study had a simple random sample been used.[§] The introduction of a weighting factor into the analysis enabled us to maintain the original degrees of freedom in our data set, to take advantage of the enhanced statistical power that results from greatly oversampling homeless families, and to estimate a model that reflects the actual risks of homelessness among subgroups of the public assistance population.

## Findings

Thirty-five percent of the homeless women, compared with six percent of the housed, were pregnant at the time of the interview. Similarly, 26 percent of the homeless women had given birth in the past year, compared with 11 percent of women in the housed sample. Thirty-seven percent of the homeless mothers had given birth before age 18; the comparable percentage in the housed sample was 24 percent. All the differences between the two groups according to these variables were statistically significant at $p<0.05$.

Based on the weighting schema mentioned earlier, we estimate that pregnant women on public assistance have an 18 percent probability of being homeless, compared with a two percent probability among those who are not pregnant. Among women on public assistance who gave birth in the past year, the probability of being homeless is eight percent; among those who did not recently give birth, the probability falls to three percent. Finally, those women who had a child before age 18 have a five percent probability of turning to a shelter, compared with three percent among women who did not give birth before age 18. All of these differences were statistically significant ($p<0.05$).

Since the homeless mothers are somewhat younger than those who have housing, the higher rates of recent childbearing associated with the homeless could be a function of age. However, as Figure 1 shows, the age compositions of the homeless and housed groups do not account for the dramatic differences. Among those aged 18–25, a substantial majority of the homeless sample (66 percent) were either currently pregnant or had recently given birth, while the proportion among those who were housed is considerably smaller (35 percent). Regardless of age-group, those seeking emergency shelter are far more likely to be either pregnant or to have new babies.

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[*] The ethnic composition of our public assistance sample is 32 percent black, 59 percent Hispanic and nine percent other. It is impossible to assess how representative this distribution is since no city-wide information is available on the ethnic composition of the public assistance population. We expect that blacks are overrepresented in our sample as a result of the oversampling described in the text. The homeless sample includes 54 percent blacks, 40 percent Hispanics and six percent other, and is representative of the overall homeless population, as this sample was randomly selected.

[†] The interviewers asked the heads of families the following: "How many children have you had?"; "How many children under 18 are staying with you now?"; and "Are you currently pregnant?" The interviewers also said to the respondents, "Now I am going to read a list of experiences many people have had as children or teenagers, before they turned 18. Please tell me whether you have had each experience—Have a baby, . . . "; and "Did any of the following happen in the last year?—You had a new baby in the past year. . . ."

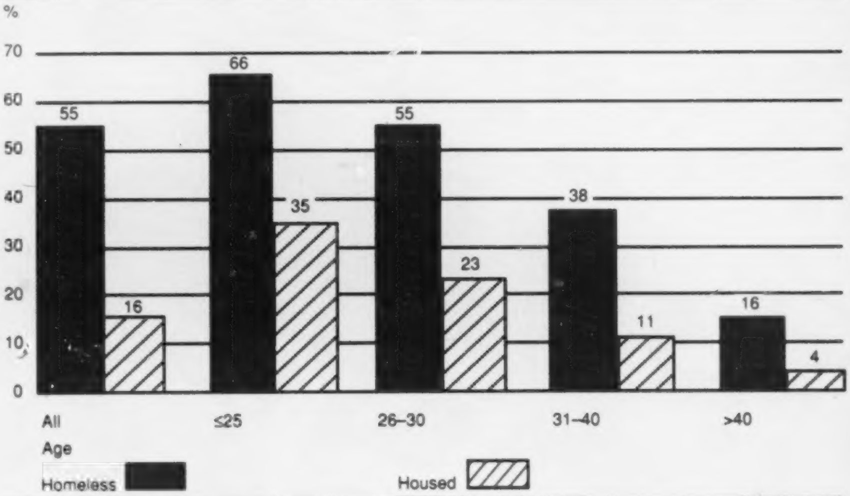
[‡] The estimate of three percent is based on administrative data from the Human Resources Administration supplied to NYU for this project. The NYU study team calculated that there are approximately 250,000 familes on public assistance on a given day and 300,000 distinct cases in a year. Approximately 4,500 homeless families use the city's emergency housing system on a given day and an estimated 10,000 distinct families do so in a year. Thus, it is estimated that three percent of the public assistance families enter a shelter during the course of a year; the responses to a question on previous shelter use among the housed sample in our survey also confirmed this rate.

[§] To develop these weights, we approximated the actual incidence of homelessness in the population under study. Shelter users were estimated to represent 3.3 percent of the general public assistance population. Thus, each of the homeless families are weighted by a factor of 0.058. This weight reflects the ratio of expected homeless families in a random sample to the actual number of homeless families sampled. In the case of the comparison sample, the weight is 2.265, reflecting the ratio of expected housed families in a random sample to the actual number of housed families sampled.

An examination of the reasons for requesting housing assistance found that pregnant women and those with new babies do so for roughly the same reasons as do other homeless mothers. Problems associated with doubling up (i.e., living in someone else's apartment) were the most frequently cited reasons for leaving the place where the family had stayed the night before and also for leaving the place where they had stayed the longest period of time during the last year. Formal and informal evictions and problems with rent payment also precipitated homelessness within this group. Thus, although having a new baby or being pregnant does appear to be related to homelessness, the immediate reasons are not generally related to childbearing.

Those homeless mothers who have recently given birth or who are currently pregnant are, in fact, more similar to other homeless mothers than they are different. No statistically significant differences were found between these two groups of homeless women in regard to teenage motherhood, utilization of well-child health care, full-time work history, race, health problems or number of moves in the past year or past three years. As already noted, however, the pregnant and new mothers were younger than the other homeless mothers. They were also more likely than homeless women who were not pregnant or new mothers to have experienced serious family disruption (e.g., being placed foster care) while growing up. Furthermore, among those who are homeless, pregnant women and those with new babies were less likely to have ever been a primary tenant, that is, to have had a stable, independent living arrangement.

**Figure 1. Percentage of public assistance families in which a baby had been born within the past year or in which the woman was pregnant at the time of interview, by housing status, according to age-group, New York City, 1988**

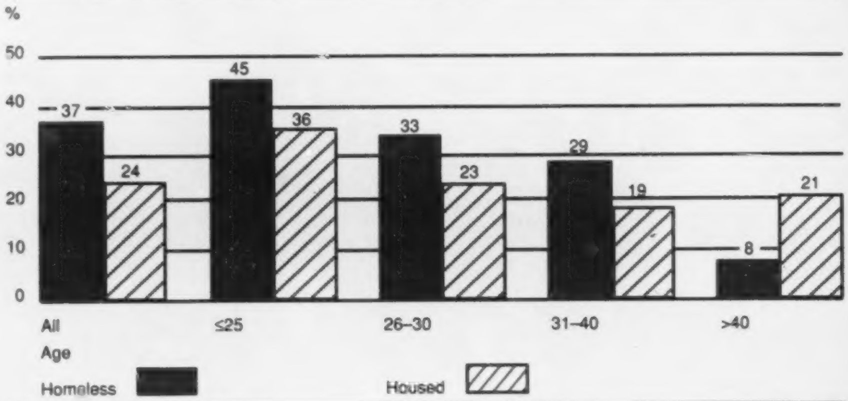


Whereas the recent addition of a child increases a family's risk of homelessness, the relationship of current family size and total number of children to homelessness is far less clear-cut. Within all but one of the age-groups, homeless and housed women have had the same number of children, but the homeless women have fewer children under 18 currently living with them. The responses from women aged 26–30 best illustrate this situation: Both homeless and housed women in this age-group reported a mean of 2.3 children. However, when asked how many children under 18 were currently staying with them, these mothers reported a mean of 1.8 children if they were homeless and 2.2 children if they were housed. The current family size among homeless women in this age-group is much smaller than what would be expected based on the number of children ever born or adopted by the mother. However, just two percent of the homeless families indicated that a child aged 17 or younger had left their household in the past year, as compared with one percent of the housed families. Overall, large family size does not appear to have a direct impact on risk of homelessness.

Almost one-third of all the women interviewed had been teenage mothers. (This proportion is substantially less than the national estimate among recipients of public assistance—almost 60 percent had been adolescent mothers.[6]) As Figure 2 shows, homeless mothers in all age-groups except those older than 40 were more likely to have given birth before age 18 than were their housed counterparts. Overall, younger women were more likely to indicate that they had been teenage mothers: Nearly half of the homeless, and over one-third of the housed under age 25 had had a child by age 18. These proportions are considerably lower among women in both samples who were over 40 at the time of the interview. Only small differences were found between black and Hispanic women in regard to teenage motherhood.

Finally, the study provides evidence that pregnant women and new mothers on public assistance—especially those who are homeless—may not be obtaining the

**Figure 2. Percentage of public assistance families in which the woman had had a baby before age 18, by housing status, according to age-group**



full range of benefits for which they are eligible. When asked if they were receiving benefits from the Women, Infants and Children program, only 44 percent of the homeless women who were pregnant or had new babies indicated that they were. The percentage among women who had housing was 60 percent.

## Discussion and Conclusions

The study findings indicate that a relationship between requests for emergency housing and pregnancy or recent births certainly exists, although its exact nature remains unclear. As a result of judicial decisions and state regulations, New York City's emergency housing policy at the time of this study favored pregnant women and those with infants.* The policy stipulated that pregnant women and new mothers had to be placed in private rooms; they could not be placed in congregate facilities where many families sleep in one large area. Also, pregnant women and new mothers were eligible for assistance in finding permanent housing at an earlier point than were other homeless women. Some argue that these policies provided greater incentive for pregnant women and new mothers to enter emergency housing (or, at least, reduced some of the disincentive for doing so). Knowing that they could not be placed in a congregate facility, pregnant women living in difficult housing situations (e.g., crowded or doubled-up families) may have been more likely than other women to leave these situations for emergency housing.

Another possible explanation for the differences in childbearing between the housed and homeless populations focuses on the strains placed on the family unit by difficult housing situations made even more untenable by pregnancy or the presence of a newborn child. The need for heat or hot water and improved sanitary conditions becomes more critical, and crime becomes more threatening. Pregnant women or new mothers are thus motivated to seek emergency housing. This scenario is especially noteworthy since relatively few of these women have ever been primary tenants in an individual household.

It is also possible that pregnancy or new motherhood does not actually precipitate homelessness so much as it is a correlate to a range of characteristics associated with families on the verge of becoming homeless. That is, perhaps one does not lead to the other but, rather, pregnancy may simply be more likely among women experiencing a range of problems and conditions typical of the period immediately preceding homelessness. It is worth stressing that for a broad range of socioeconomic factors, the pregnant and new mothers do not differ greatly from homeless women overall.

Although pregnancy and recent births are related to homelessness, it does not appear that homelessness is the result of increased family size per se. Neither the number of children born nor current family size readily distinguishes the housed poor from the homeless. For this reason, it seems unlikely that a lack of large, low-rent apartments is a direct cause of significant amounts of homelessness. However, although housed and homeless women reported having had the same number of children, the homeless have fewer of their children currently living with them. Even homeless mothers under age 30, who are the most likely to have children under 18, have fewer children living with them than would be expected based on the number of children born. This finding potentially lends support to the hypothesis that the homeless "give up" (voluntarily or by force) some of their children during difficult periods; however, we must also remember that only two percent of the homeless indicated that a minor child had left their household during the past year.

Teenage motherhood is associated with an increased probability of homelessness among public assistance families. But this association is not nearly as strong as that for current pregnancies and births. In all likelihood, teenage motherhood is one of a constellation of factors that impede financial independence, but its effect probably subsides over time. Interestingly, few of the homeless families interviewed were headed by teenagers. This may be the result of city policies that refer pregnant or parenting teenagers to agencies and facilities specifically targeted to them.

This study sought to identify precursors to homelessness, rather than to specifically examine the influence of childbearing on homelessness. However, given the findings, further exploration of these relationships may be warranted. A related study of the impact of unwanted pregnancies (as compared with planned or wanted pregnancies) on housing instability might provide useful insights; contrasting the risk posed by early marriage with that presented by early childbearing would also be worth undertaking. Even though further analyses should help to disentangle the relationships among the variables, there is ample evidence at this time to indicate that birth experiences (current and recent pregnancies and early pregnancies) must be factored into any model of risk of homelessness. Further, given the disproportionate number of homeless families with a pregnancy or a new baby, it would be worth considering what kinds of preventive services would reduce their risk of requiring emergency housing.

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*Such policies are currently in flux and many of the extra services decribed in this paper (e.g., priority placement in permanent housing) are no longer targeted to pregnant women and new mothers.

# Factors Associated with Use Of the Contraceptive Sponge

*By S. Marie Harvey, Linda J. Beckman and Joan Murray*

### Summary

A study of 264 current sponge users, 266 pill users and 45 diaphragm users shows that women who adopted the sponge were older, more educated and more likely to be married, to have higher incomes and to have had more pregnancies and children than were women who had used oral contraceptives. Compared with diaphragm users, sponge users were more likely to be never-married, had had fewer children and were more likely to be Protestant.

Users of all three methods cited physicians as being the greatest source of influence in the decision to adopt their current method; however, sponge users were the least likely to cite physicians, and they were more likely to have been favorably influenced by the media than were pill or diaphragm users. Sponge users were more likely than pill users to have ever relied on other contraceptive methods and to have correctly answered more questions on contraceptive knowledge. Sponge users and diaphragm users were similar in the range of methods they had ever used and in contraceptive knowledge. However, sponge users reported more consistent use than did diaphragm users.

### Introduction

The contraceptive sponge was approved by the U.S. Food and Drug Administration for over-the-counter sale in April 1983, and was first made commercially available in the United States in July 1983. In the popular press, the method was both hailed as an important new contraceptive technique for the health-conscious women[1] and treated with suspicion as a possibly unsafe and dangerous contraceptive that may not have been tested adequately.[2] To date, previous studies have focused primarily on the effectiveness and safety of the device. In a trial conducted in the United States to compare the contraceptive sponge and the diaphragm, the overall one-year life-table pregnancy rate was higher for sponge users (17.0 pregnancies per 1,000 users per year) than for diaphragm users (12.5 per 1,000).[3] However, the second-year rate for sponge users was significantly lower than the first-year rate, and pregnancy rates for first-time sponge users and diaphragm users were similar.[4] Although no serious side effects were associated with use of either contraceptive, rates of discontinuation because of allergic-type reactions and discomfort were higher for sponge users. The sponge, however, appears to have some advantages over other vaginal contraceptives, including continuous protection for 24 hours and ease of use.

The introduction of this new contraceptive into the array of existing methods raises questions about who is choosing the sponge and what factors are associated with its use. Moreover, decisions involving contraceptive choice are of particular interest to researchers, given the high rate of unintended pregnancy in the United States, primarily as a result of nonuse, inconsistent method use or reliance on ineffective methods.[5] Most research has been focused on the decision to use contraceptives and on reasons for nonuse or discontinuation; a few studies have examined factors associated with choosing one method over another and how different methods are perceived.[6]

Previous investigations have suggested that contraceptive behavior, including contraceptive choice, is a highly complex phenomenon influenced by many determinants.[7] Demographic variables have been found to be associated with the use of different methods of contraception. For example, younger women are more likely to use birth control pills than are older women.[8] In addition, data from a recent study[9] of single American women in their 20s suggest that the proportion who select the pill, the IUD and sterilization steadily declines as their education increases; conversely, the proportion who use condoms, the diaphragm and spermicides increases with education. Although no differences in method choice were found between working and nonworking women, more religious women were less likely than others to rely on the pill, the IUD or sterilization and were more likely to choose barrier methods.[10] Similarly, religious affiliation appears to affect method choice: Data from Cycle III of the National Survey of Family Growth suggest that Catholic women are more likely than Protestant women to use a barrier method and are less likely to use oral contraceptives.[11]

Earlier research has also examined the relationship of sex-role attitudes to fertility and family-size preferences.[12] These studies suggest that the degree of traditionalism in sex-role attitudes may be a significant determinant of fertility desires and short-term fertility decisions. For instance, some women may choose to delay childbearing or have a small family because of a concern that parenthood will interfere with a job or a career.[13] Such sex-role attitudes and role aspirations are thought to influence contraceptive preference both directly and indirectly, via the strength of the motivation to avoid pregnancy. For example, women who are less traditional and more career-oriented may be highly motivated to avoid pregnancy and, therefore, more likely to adopt an effective contraceptive method such as the pill. On the other hand, women who are less traditional may be more likely to adopt "innovative" methods such as the sponge.

Since the decision to use a particular

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**Table 1. Means and percentage distributions among three groups of contraceptive users, by selected characteristics, according to current method, 1986–1987**

| Measure | Current method | | |
|---|---|---|---|
| | Sponge (N=264) | Pill (N=266) | Diaphragm (N=45) |
| MEAN | | | |
| Age | 31.5 | 25.7** | 31.2 |
| Years of education | 14.6 | 13.2** | 14.8 |
| Income score† | 6.7 | 5.9* | 7.5 |
| No. of pregnancies | 1.5 | 1.1** | 1.7 |
| No. of children | 1.0 | 0.8* | 1.6* |
| PERCENT | | | |
| **Ethnicity** | | | |
| White | 91.4 | 90.9 | 97.7 |
| Black | 4.3 | 7.5 | 2.3 |
| Hispanic | 4.3 | 1.6 | 0.0 |
| **Religion** | | | |
| Protestant | 50.2 | 52.9 | 34.1* |
| Catholic | 39.5 | 41.3 | 47.7 |
| Jewish | 5.0 | 1.2 | 18.2 |
| None | 5.4 | 4.6 | 0.0 |
| **Marital status** | | | |
| Never-married | 23.9 | 37.2** | 13.3* |
| Currently married | 55.7 | 53.8 | 80.0 |
| Widowed, separated or divorced | 20.5 | 9.0 | 6.7 |
| **Employment status** | | | |
| Full-time | 56.4 | 50.0 | 44.4 |
| Part-time | 20.1 | 17.3 | 22.2 |
| Not employed | 23.5 | 32.7 | 33.3 |
| Total | 100.0 | 100.0 | 100.0 |

*Difference significant at $p<0.01$.

**Difference significant at $p<0.001$.

†The mean income score was calculated on a scale of 1–11, with 1 = an annual income <$5,000, 2 = an income of $5,000–$9,999 and each successive number through 10 representing an increase of $5,000; 11 = an income of >$50,000.

method occurs within a matrix of interpersonal or societal pressures, the influence of other persons must also be examined in order to understand contraceptive choice. A number of investigators have emphasized the influence of partners, friends, relatives and contraceptive providers on the initiation or continuation of method use.[14] The male partner's desires about and attitudes toward childbearing are likely to affect a woman's motivation to have children, thus influencing contraceptive behavior.[15] Findings from a longitudinal study of young married couples indicated that physicians were the most important influence in a couples' decision to use a particular method; on the other hand, the media, friends and relatives had little influence on the use of specific contraceptive methods.[16]

Finally, the decision to use a particular type of contraceptive is likely to be influenced by the stability of the sexual relationship and the frequency of intercourse. Such factors as previous experience and level of satisfaction with various methods, as well as contraceptive knowledge, are also predicted to affect method choice.[17] In addition, the selection of a method may be influenced by the relative desirability of other available contraceptives.[18] For example, women may be more likely to use the vaginal sponge if the birth control pill is viewed as an unacceptable alternative.

This article represents the first national investigation to examine the acceptability and utilization of the contraceptive sponge. The overall purpose of the study was to distinguish factors associated with its use: We examine the demographic characteristics, personal variables, interpersonal factors and contraceptive history of users of the sponge, the pill and the diaphragm. We are thus able to compare women who use the sponge with women who use an established nonvaginal method and those who use an established vaginal method.

## Methodology

All participants in the study were sexually active, fecund women 15–44 years of age. The sample of 264 current sponge users was randomly selected from a national listing of over 35,000 women who sent in a coupon to the sponge's manufacturer for a rebate on their purchase of the sponge. The listing from which the participants were selected represented a substantial proportion of women who had purchased the sponge during the rebate period.

Current use of the sponge was defined as use within the last 30 days; however, over 96 percent of the sample had been using the sponge for six months or more. Women who used other methods in addition to the sponge were excluded from the sample. Although this procedure could not generate a truly representative sample of sponge users, we employed this approach because, at the time of the study, sponge users were too few to be accessible through random screening. The cost of obtaining a random sample of sponge users would be prohibitive, and this procedure provided a national sample of such women.

The comparison samples were made up of 266 current users of oral contraceptives and 45 current users of the diaphragm who lived in the same local geographic areas as the sponge users. In order to ensure that the comparison women were from the same geographic areas as the sponge users, they were selected by means of random-digit dialing in areas with the same telephone prefixes as the identified sponge users. Current use of the pill or the diaphragm was defined as use within the last 30 days, and women who had used more than one method were excluded. Inclusion in the comparison groups was further limited to women who had never used the sponge. Because of small sample size, the findings involving the diaphragm users should be interpreted with caution.

Each woman participated in a telephone interview that lasted an average of 35 minutes. Female interviewers used a standardized schedule of structured and open-ended questions. Respondents were asked for information on their age, marital or relationship status, ethnicity, religious background, education, employment status and family income, as well as on the number of pregnancies and children they had had.

The respondents were also asked about such personal characteristics as their motivation to avoid pregnancy, their sex-role attitudes and their role aspirations. Motivation to avoid pregnancy was assessed by the following two questions adapted from a previous study:[19] "In the next six months, do you plan or intend to get pregnant? Would you say definitely no, probably no, probably yes or definitely yes?" and "How much do you want to avoid getting pregnant in the next six months? Would you say not at all, somewhat or very much?" Sex-role traditionalism was measured by a summary score of the respondent's degree of agreement or disagreement with six statements focusing on women's roles in the family and the work force.* Items used to measure sex-role traditionalism were drawn from two published sources,[20] and a brief instrument to be used in telephone interviews was constructed. Role aspirations were evaluated by three questions assessing career and homemaker orientation: "How important is it for you to work to help support yourself and your family?" (on a scale of 1–5, ranging from unimportant to extremely important); "If you didn't absolutely have to work to earn money, would you work

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*The scale of sex-role traditionalism consisted of six statements: Women should take increasing responsibility for leadership in solving the intellectual and social problems of the day; a woman should be as free as a man to propose marriage; a woman should not let having and caring for children stand in the way if she wants a career; a woman should have exactly the same job opportunities as a man; although women hold many important jobs, their proper place is in the home; and I could not respect a man if he decided to stay at home and take care of his children while his wife worked.

**Table 2. Personal characteristics and contraceptive and sexual history measures among three groups of contraceptive users**

| Characteristic or measure | Current method | | |
|---|---|---|---|
| | Sponge (N= 264) | Pill (N= 266) | Diaphragm (N= 45) |
| **Mean sex-role traditionalism score** | **10.8** | **11.7*** | **10.7** |
| **Role aspirations** | | | |
| Important to work for own support† | 3.8 | 3.8 | 3.8 |
| Would work if did not have to‡ | 2.0 | 2.0 | 2.0 |
| Career-oriented§ | 3.3 | 3.4 | 3.3 |
| **Motivation to avoid pregnancy** | | | |
| Intention to avoid pregnancy†† | 1.4 | 1.3 | 1.7 |
| % who "very much" want to avoid pregnancy | 82.6 | 86.3 | 92.3 |
| **Sexual history** | | | |
| Mean length of sexual relationship (in yrs.) | 16.4 | 14.0 | 11.3 |
| Frequency of intercourse‡‡ | 4.4 | 4.5 | 4.3 |
| Satisfaction with method§§ | 4.5 | 4.5 | 4.3 |
| Partner's satisfaction with method§§ | 4.3 | 4.5 | 4.1 |
| Consistency of method use*† | 4.3 | 4.3 | 3.9* |

*Difference significant at p<0.01.

†Mean score, with 1=unimportant and 5=extremely important.

‡Mean score, with 1=working full-time and 3=not working at all.

§Mean score, with 1=not at all and 5=extremely.

††Mean score, with 1=definitely not and 4=definitely yes.

‡‡Mean score, with 1=never and 6=more than three times per week.

§§Mean score, with 1=extremely dissatisfied and 4=extremely satisfied.

*†Mean score for frequency of skipping and not using any method, with 1=most of the time and 5=never.

full-time, work part-time or not work at all?" and "How career-oriented do you consider yourself to be?" (on a scale of 1–5, ranging from not at all to extremely).

The influence of other persons on the choice of the current contraceptive method was assessed by asking "Who, if anyone, influenced you to start using this method?" Women in stable relationships were asked about their partner's satisfaction with the method on a scale of 1–5, ranging from extremely dissatisfied to extremely satisfied.

Sexual history variables included the length of the current sexual relationship and the frequency of sexual intercourse. Additional questions addressed contraceptive methods the woman had previously used and methods she would never use. Respondents were asked to evaluate how satisfied they were with their current method (on a scale of 1–5, ranging from extremely dissatisfied to extremely satisfied). To determine the woman's consistency of contraceptive use, the subjects were asked "How many times, if any, did you skip and not use any method: most times, often, sometimes, once or twice, or never?" This variable was coded so that higher scores represented more consistent use. Contraceptive knowledge was evaluated through eight true-false items, including four questions concerning the vaginal sponge, that were developed by the authors for the purposes of this project.

## Results

On the demographic measures, sponge and pill users differed in terms of age, marital status, education, income, number of pregnancies and number of children (Table 1).* Sponge users were significantly older (32 vs. 26), were more educated (15 years vs. 13 years), had higher incomes and were less likely never to have been married (24 percent vs. 37 percent). In addition, sponge users had had more lifetime pregnancies (1.5 vs. 1.1) and a greater mean number of children (1.0 vs. 0.8).

Sponge users and diaphragm users, on the other hand, differed in regard to their marital status, religion and number of children. Diaphragm users were significantly less likely to be never-married (24 percent vs. 13 percent) and had had significantly more children (1.6 vs. 1.0); sponge users were more likely than diaphragm users to be Protestant (50 percent vs. 34 percent).

On the basis of the combined score of the six items that assessed sex-role traditionalism (Table 2), women who used oral contraceptives appear to be more traditional than sponge users (scores of 11.7 vs. 10.8). The two groups did not differ significantly, however, on the three questions measuring role aspirations. In addition, no significant differences were found between the two samples in the strength of their motivation to avoid pregnancy. Sponge users and diaphragm users did not differ in any of these three areas.

As the variables regarding sexual history indicate, sponge users and pill users did not differ significantly in regard to the length of their relationship, frequency of intercourse, satisfaction with their method, partner's satisfaction or consistency of method use. Women who used the sponge did not differ from women who used the diaphragm on four of the five variables. However, sponge users rated significantly higher than diaphragm users on consistency of contraceptive use.

**Table 3. Percentage of women, by source of influence in their choice of a contraceptive method, according to current method**

| Influence | Current method | | |
|---|---|---|---|
| | Sponge (N= 264) | Pill (N= 266) | Diaphragm (N= 45) |
| Physician | 25.8 | 43.2** | 57.8** |
| Family planning clinic | 1.9 | 5.3 | 0.0 |
| Partner | 3.4 | 6.8 | 0.0 |
| Friend | 11.7 | 15.8 | 11.1 |
| Relative | 3.8 | 12.0** | 13.3 |
| Media | 16.3 | 0.0** | 0.0* |

*Difference significant at p<0.01.

**Difference significant at p<0.001.

The results of questions regarding the influence of others on the woman's selection of her current contraceptive are shown in Table 3. Among women using the pill or the sponge, we found that the highest percentage of women in both groups reported that they had been influenced by physicians (43 percent vs. 26 percent), but the proportion was significantly higher among pill users. In addition, pill users more often reported that they had been influenced by relatives than did sponge users (12 percent vs. four percent). Conversely, a significantly higher percentage of sponge users reported that they had been influenced by the media (16 percent of sponge users and no pill users). In the sample of sponge users, the media were the second most cited influence on method choice. ("Media" includes advertisements seen or heard on the radio or TV or read in newspapers and magazines, as well as news stories from any of those sources.)

A significantly higher percentage of diaphragm users than sponge users reported having been influenced by physicians to use their method (58 percent vs. 26 percent). Again, none of the women using the diaphragm reported having been influenced by the mass media, whereas 16 percent of sponge users said they had been.

When pill users and sponge users were compared on their contraceptive knowledge, a significantly higher percentage of sponge users answered seven of the eight questions correctly (Table 4—page 182). On six of the eight questions, the percentages of sponge users and diaphragm users answering correctly did not differ significantly; however, sponge users were more likely than diaphragm users to correctly answer two questions about the sponge.

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*Because a large number of tests were performed, only differences significant at p≤0.01 are reported in this article.

**Table 4. Percentage of women answering contraceptive knowledge items correctly, by current method used**

| Item | Current method | | |
|---|---|---|---|
| | Sponge (N=264) | Pill (N=266) | Diaphragm (N=45) |
| A woman is most likely to become pregnant midway between two periods | 86.7 | 71.1** | 88.9 |
| A woman is always safe from pregnancy if intercourse occurs during her period | 86.7 | 77.8* | 95.6 |
| The sponge provides contraceptive protection for 24 hours, regardless of frequency of intercourse | 93.9 | 19.5** | 15.6** |
| Because the sponge comes in a variety of sizes, it must be fitted by a physician and requires a prescription | 98.9 | 42.1** | 48.9** |
| The sponge is more effective in preventing pregnancy than the diaphragm | 31.8 | 27.8 | 40.0 |
| The sponge can reduce the chance of getting sexually transmitted diseases | 25.8 | 10.5** | 11.1 |
| The effectiveness of the diaphragm is increased when it is used with a cream or jelly | 94.3 | 79.3** | 97.8 |
| Condoms or rubbers break easily | 45.1 | 30.5** | 48.9 |

*Difference significant at p<0.01.

**Difference significant at p<0.001.

To compare the groups' contraceptive histories, respondents were asked whether they had ever used each of a number of birth control methods (Table 5). Compared with pill users, sponge users were more likely to have ever used condoms, the IUD, the diaphragm, rhythm and foam. Women were then asked an open-ended question about what contraceptive methods they would never use under any circumstances (not shown). Among both sponge users and pill users, the highest percentage was among those who replied that they would never use the IUD (58.7 percent and 52.3 percent, respectively). Smaller but similar percentages of the two groups reported that they would never use each of a number of other contraceptive methods.

Sponge users and diaphragm users differed significantly only in the percentage reporting that they had ever used the diaphragm itself. Although the groups did not differ significantly in the percentage who reported that they would never use each of a number of contraceptive methods (not shown), a substantial percentage of sponge users (35.2 percent) and diaphragm users (44.4 percent) indicated that they would never use oral contraceptives.

Because the differences noted previously on sex-role traditionalism and consistency of contraceptive use might have been related to differences between the groups' demographic characteristics, we ran hierarchical multiple regressions to examine this possibility. In these analyses, demographic characteristics such as age, education, income and number of children were entered first; the group variable was then entered to determine whether there was a significant relationship between group membership and the outcome. The relationship with traditionalism in the comparison of sponge and pill users was no longer significant. However, among sponge and diaphragm users, the association between consistency of use and method used remained statistically significant at $p<0.05$.

## Discussion

The introduction of a new method of fertility regulation, the contraceptive sponge, offered a rare opportunity to examine who tries an innovative and unfamiliar contraceptive method. The study findings suggest that the profile of women who adopt the sponge differs in a number of ways from that of users of other methods. Compared with women who use oral contraceptives (a method independent of coitus), women who use the sponge are more educated, are more likely to have never married, have higher incomes and have had more pregnancies and more children. These data are consistent with previous findings indicating that the use of barrier methods increases with education,[21] and that younger women are more likely to use the pill than are older women.[22] Compared with women who use the diaphragm (an established coitus-dependent method), women who use the sponge are more likely to be never-married, have fewer children and are more likely to be Protestant.

Since older women are at higher risk for health complications related to oral contraceptives (particularly cardiovascular disease), it follows that with increased age, fewer women select the pill and more choose barrier methods. In addition, unlike the pill and the IUD, the sponge affords women a method that is both fairly effective and free from major health risks and complications. More educated women may know more about the adverse health effects attributed to the pill and the IUD and may, therefore, be more willing to use a coitus-dependent contraceptive method.

**Table 5. Percentage of women who have ever used a particular contraceptive method, by current method**

| Method ever used | Current method | | |
|---|---|---|---|
| | Sponge (N=264) | Pill (N=266) | Diaphragm (N=45) |
| Pill | 88.3 | 100.0** | 73.3 |
| Condom | 70.1 | 52.3** | 62.2 |
| IUD | 22.7 | 6.0** | 17.8 |
| Diaphragm | 49.2 | 14.3** | 100.0** |
| Rhythm | 22.7 | 13.2* | 26.7 |
| Withdrawal | 29.2 | 27.1 | 15.6 |
| Foam | 40.9 | 16.5** | 24.4 |

*Difference significant at p<0.01.

**Difference significant at p<0.001.

Sponge users and diaphragm users were similar in regard to many demographic and personal characteristics. This finding suggests that sponge users may in general be similar to women who use other coitus-dependent methods. The differences that do exist between the two groups suggest that sponge users are less likely to be in an established, stable relationship. Thus, the relative convenience in obtaining and using the sponge may be a factor in their choice. It is noteworthy that compared with diaphragm users, sponge users reported more consistent use of the method.

The decision to adopt a new contraceptive device appears to be further influenced by one's previous experience with contraceptive methods. Since all coitus-dependent contraceptives have similar advantages and disadvantages, previous use of these methods may have a positive effect on the acceptability of a new coitus-dependent contraceptive. Thus, it is not surprising to find that, compared with pill users, a higher percentage of sponge users had previously used the diaphragm, condoms and foam. It is noteworthy that sponge users were more likely than pill users to report that they had ever used any of the other contraceptive methods—other than the pill—as well as that they were more likely to have correctly answered the contraceptive knowledge items. In contrast, sponge users and diaphragm users were similar in the methods they had ever used. These data suggest that contraceptive experience may be a contributing factor in the adoption of an innovative method.

Sponge users did not differ from pill users or from diaphragm users on their sex-role traditionalism, role aspirations or motivation to avoid pregnancy. It is noteworthy that all three groups of women reported that they were highly motivated to avoid pregnancy and were either somewhat or very career-oriented. Women who use the pill may find oral contraceptives highly acceptable because of the perceived effectiveness of this method. Conversely, sponge users, who are also highly motivated to avoid pregnancy, appear more willing to experiment with a less effective but innovative contraceptive device.

Consistent with the findings from an earlier study,[23] the most common influence on contraceptive choice for all three groups of women was their physician. However, a higher percentage of pill users and diaphragm users than sponge users reported such an influence. Since the pill and diaphragm require physician intervention, it is not surprising that women who use these methods report more physician influence.

Conversely, a higher percentage of sponge users than pill users or diaphragm users reported that they were influenced by the media, with none of the women in the latter two groups citing this influence. Of potential importance is the finding that the media were the second most cited influence on the woman's decision to use the contraceptive sponge. An innovative new contraceptive device is likely to create more media attention than a more established contraceptive method. In addition, over the past two years, advertisements for the contraceptive sponge have appeared in numerous magazines, and publicity about this method has resulted from news stories in the popular media. This finding is consistent with an early study documenting the influence of the mass media on contraceptive method selection,[24] and suggests that the media may be an effective vehicle for the dissemination of contraceptive information.

All of these results must be evaluated in light of the possible limitations inherent in the sampling procedure used to select sponge users. As previously mentioned, sponge users were randomly selected from a national listing of over 35,000 women who sent in a coupon for a rebate on their purchase of the sponge. Since random selection of sponge users was not possible, the method employed may have generated a sample that is not representative of the entire population of sponge users. Women who applied for a rebate may differ from sponge users who never did. For example, since the rebate would generally be sent to the woman's residence, the selection procedure may have biased the sample against the inclusion of teenagers; a teenager living with her parents may not be comfortable about receiving mail indicating that she has purchased contraceptives. Another limitation of the present study is that pill and diaphragm users were chosen in a different manner than sponge users. Although it is unlikely, the difference between sponge users and users of the other methods could have been related to the difference in sample selection.

In summary, the study findings suggest that with respect to a number of demographic and interpersonal characteristics, as well as to contraceptive history, women who adopt the vaginal sponge differ from those who use other methods. Moreover, the types of differences observed vary by whether the comparison group uses a method independent from or dependent on coitus. Thus, the sponge is an important addition to the array of available methods, but like the others is not necessarily appropriate for all women or in all situations. Based on the findings of this limited study, family planning providers can help women decide whether to use the sponge by counseling them on whether their backgrounds and life situations make them good candidates for its use.

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# Documents

## The Court Edges Away from *Roe* v. *Wade*

On July 3, 1989, the U.S. Supreme Court issued its decision in *Webster* v. *Reproductive Health Services*, a case involving the constitutionality of a 1986 Missouri abortion law. The Court upheld (or dismissed challenges to) four provisions of the Missouri law, with the justices issuing a plurality opinion, two concurring opinions and two dissenting opinions. The state of Missouri and the Bush administration had urged the Supreme Court to use the Missouri case to overturn *Roe* v. *Wade*, the 1973 decision that recognized a woman's constitutional right to decide to terminate an unwanted pregnancy. The Court did not explicitly do so. However, Antonin Scalia said the decision should be reversed, and the three justices who issued the plurality opinion—written by Chief Justice William Rehnquist and joined by Byron White and Anthony Kennedy—specifically abandoned the trimester framework established in *Roe*, which bars states from interfering in a woman's decision in the early months of pregnancy without a compelling reason. They argued that states have a compelling interest in protecting fetal life throughout pregnancy, not just after viability, as was held in *Roe*.

Specifically, by a 5–4 margin, the Court declined to rule on the constitutionality of the statute's preamble, which contains a "finding" that "the life of each human being begins at conception," reasoning that it is merely an expression of the state's preference for childbirth over abortion and does not regulate abortion. By the same margin, the Court ruled that the ban on the use of public facilities for the performance of abortions not necessary to save the woman's life (section 188.215) was a logical and permissible extension of the Court's earlier rulings that states and the federal government do not have to pay for abortions for the indigent.

It also upheld, 5–4, the constitutionality of a provision (section 188.029) requiring that a doctor, before aborting a fetus believed to be at least 20 weeks' gestation, determine if the fetus is viable and perform tests that establish the fetus's gestational age, weight and lung maturity. The lower courts had struck down the viability-testing requirement because it would make abortions more expensive, in many cases unnecessarily so, since tests for lung maturity cannot provide the necessary information until the fetus is at least 28–30 weeks' gestation. But the plurality of Rehnquist, White and Kennedy said the law did not require doctors to perform all the tests in every case but simply to perform tests that are "useful in making subsidiary findings as to viability." Sandra Day O'Connor agreed with this reasoning, and Scalia agreed that the provision was constitutional, adding that he would have used it as a vehicle to reexamine *Roe* v. *Wade*.

All nine justices agreed that the challenge to a provision of the law prohibiting the use of public funds for counseling or encouraging a woman to have an abortion not necessary to save her life (section 188.205) was moot. They based their ruling on the state's assertion that the ban applies only to state employees who are responsible for spending public funds, not to doctors and other health care providers, and on the fact that none of those challenging the law were adversely affected under this interpretation.

The law had been challenged by two private, nonprofit reproductive health care agencies and five publicly employed health care professionals. They are the appellees referred to in the following excerpts. The state and its attorney general, William Webster, defended the law and are the appellants.

### The Plurality Opinion

This appeal concerns the constitutionality of a Missouri statute regulating the performance of abortions. The United States Court of Appeals for the Eighth Circuit struck down several provisions of the statute on the ground that they violated this Court's decision in *Roe* v. *Wade*.[1] We . . . reverse. . . .

The Act's preamble . . . sets forth "findings" by the Missouri legislature that "[t]he life of each human being begins at conception," and that "[u]nborn children have protectable interests in life, health and well-being.". . .[2]

. . . [T]he preamble does not by its terms regulate abortion or any other aspect of appellees' medical practice. The Court has emphasized that *Roe* v. *Wade* "implies no limitation on the authority of a State to make a value judgment favoring childbirth over abortion."[3] . . . The preamble can be read simply to express that sort of value judgment.

. . . [T]he extent to which the preamble's language might be used to interpret other state statutes or regulations is something that only the courts of Missouri can definitively decide. . . .

It will be time enough for federal courts to address the meaning of the preamble should it be applied to restrict the activities of appellees in some concrete way. . . . We therefore need not pass on the constitutionality of the Act's preamble.

Section 188.210 provides that "[i]t shall be unlawful for any public employee within the scope of his employment to perform or assist an abortion, not necessary to save the life of the mother," while section 188.215 makes it "unlawful for any public facility to be used for the purpose of performing or assisting an abortion not necessary to save the life of the mother.". . .

. . . In *Maher* v. *Roe*,[4] . . . the Court upheld a Connecticut welfare regulation under which Medicaid recipients received payments for medical services related to childbirth, but not for nontherapeutic abortions. The Court rejected the claim that this unequal subsidization of childbirth and abortion was impermissible under *Roe* v. *Wade*. . . . Relying on *Maher*, the Court in *Poelker* v. *Doe*[5] . . . held that the city of St. Louis committed "no constitutional violation . . . in electing, as a policy choice, to provide publicly financed hospital services for childbirth without providing corresponding services for nontherapeutic abortions."

More recently, in *Harris* v. *McRae*,[6] . . . the Court upheld "the most restrictive version of the Hyde Amendment," . . . which withheld from States federal funds under the Medicaid program to reimburse the costs of abortions, "'except where the life of the mother would be endangered if the fetus were carried to term.'"[7] . . .

. . . Having held that the State's refusal to fund abortions does not violate *Roe* v. *Wade*, it strains logic to reach a contrary result for the use of public facilities and employees. If the State may "make a value judgment favoring childbirth over abortion and . . . implement that judgment by the allocation of public funds,"[8] . . . surely it may do so through the allocation of other public resources, such as hospitals and medical staff. . . .

The Missouri Act contains three provisions relating to "encouraging or counseling a woman to have an abortion not necessary to save her life." Section 188.205 states that no public funds can be used for this purpose; section 188.210 states that public employees cannot, within the scope of their employment, engage in such speech; and section 188.215 forbids such speech in public facilities. The Court of Appeals . . . held that all three of these provisions were [unconstitutional].[9] . . .

Missouri has chosen only to appeal the Court of Appeals' invalidation of the public funding provision [section 188.205]. . . . We accept, for purposes of decision, the State's claim that [this section] "is not directed at the conduct of any physician or health care provider, private or public," but "is directed solely at those persons responsible for expending public funds."[10]

Appellees contend that they are not "adversely" affected under the State's interpretation . . . and therefore that there is no longer a case or controversy before us on this question.[11] . . . A majority of the Court agrees with appellees that the controversy over section 188.205 is now moot. . . .

Section 188.029 of the Missouri Act provides: "Before a physician performs an abortion on a woman he has reason to believe is carrying an unborn child of twenty or more weeks gestational age, the physician shall first determine if the unborn child is viable by using and exercising that degree of care, skill, and proficiency commonly exercised by the ordinarily skillful, careful, and prudent physician engaged in similar practice under the same or similar conditions. In making this determination of viability, the physician shall perform or cause to be performed such medical examinations and tests as are necessary to make a finding of the gestational age, weight, and lung maturity of the unborn child. . . ."

The Court of Appeals read section 188.029 as requiring that after 20 weeks "doctors *must* perform tests to find gestational age, fetal weight and lung maturity."[12] . . .

We think the viability-testing provision makes sense only if the second sentence is read to require only those tests that are useful to making subsidiary findings as to viability. If we construe this provision to require a physician to perform those tests needed to make the three specified findings *in all circumstances*, including when the physician's reasonable professional judgment indicates that the test would be irrelevant to determining viability or even dangerous to the mother and the fetus, the second sentence of [the section] would conflict with the first sentence's *requirement* that a physician apply his reasonable professional skill and judgment. It would also be incongruous to read this provision, especially the word "necessary," to require the performance of tests irrelevant to the expressed statutory purpose of determining viability. . . .

In *Roe* v. *Wade*, the Court [held that] . . . [a]fter viability, "the State's interest in potential human life [becomes] compelling, [and] the State "may, if it chooses, regulate, and even proscribe, abortion except where it is necessary . . . for the preservation of the life or health of the mother."[13]

In *Colautti* v. *Franklin*,[14] . . . the Court held that a Pennsylvania statute regulating the standard of care to be used by a physician performing an abortion of a possibly viable fetus was void for vagueness . . . [b]ut reaffirmed its earlier statement in *Planned Parenthood of Central Missouri* v. *Danforth*,[15] . . . that "'the determination of whether a particular fetus is viable is, and must be, a matter for the judgment [sic] of the responsible attending physician.'" . . . To the extent that section 188.029 regulates the method for determining viability, it undoubtedly does superimpose state regulation on the medical determination of whether a particular fetus is viable. The Court of Appeals and the District Court thought it unconstitutional for this reason. . . . To the extent that the viability tests increase the cost of what are in fact second-trimester abortions, their validity may also be questioned under *Akron* [v. *Akron Center for Reproductive Health*],[16] where the Court held that a requirement that second trimester abortions must be performed in hospitals was invalid because it substantially increased the expense of those procedures.

We think that the doubt cast upon the Missouri statute by these cases is not so much a flaw in the statute as it is a reflection of the fact that the rigid trimester analysis of the course of pregnancy enunciated in *Roe* has resulted in subsequent cases like *Colautti* and *Akron* making constitutional law in this area a virtual Procrustean bed. . . .

*Stare decisis* is a cornerstone of our legal system, but it has less power in constitutional cases. . . . We have not refrained from reconsideration of a prior construction of the Constitution that has proved "unsound in principle and unworkable in practice."[17] . . . We think the *Roe* trimester framework falls into that category.

In the first place, [the] rigid . . . framework is hardly consistent with the notion of a Constitution cast in general terms, as ours is, and usually speaking in general principles, as ours does. . . . Since the bounds of the inquiry are essentially indeterminate, the result has been a web of legal rules that have become increasingly intricate, resembling a code of regulations rather than a body of constitutional doctrine. . . .

In the second place, we do not see why the State's interest in protecting potential human life should come into existence only at the point of viability, and that there should therefore be a rigid line allowing state regulation after viability but prohibiting it before viability. . . .

. . . Since the [required] tests will undoubtedly show in many cases that the fetus is not viable, the tests will have been performed for what were in fact second-trimester abortions. But we are satisfied that the requirement of these tests permissibly furthers the State's interest in protecting potential life, and we therefore believe section 188.029 to be constitutional.

The dissent takes us to task for our failure to join in a "great issues" debate as to whether the Constitution includes an "unenumerated" general right to privacy as recognized in such cases as *Griswold* v. *Connecticut*[18] . . . and *Roe*. But *Griswold* . . . , unlike *Roe*, did not purport to adopt a whole framework, complete with detailed rules and distinctions, to govern the cases in which the asserted liberty interest would apply. As such it was far different from the opinion, if not the holding, of *Roe* v. *Wade*. . . .

. . . There is no doubt that our holding today will allow some governmental regulation of abortion that would have been prohibited under [previous decisions]. . . .

Both appellants and the United States as *Amicus Curiae* have urged that we overrule our decision in *Roe* v. *Wade*. . . . The facts of the present case, however, differ from those at issue in *Roe*. Here, Missouri has determined that viability is the point at which its interest in potential human life must be safeguarded. In *Roe*, . . . the Texas statute criminalized the performance of *all* abortions, except when the mother's life was at stake. . . . This case therefore affords us no occasion to revisit the holding in *Roe*. . . . To the extent indicated in our opinion, we would modify and narrow *Roe* and succeeding cases.

### Sandra Day O'Connor Concurs

. . . In its interpretation of Missouri's "determination of viability" provision . . . the plurality has proceeded in a manner unnecessary to deciding the question at hand. . . . When read together with the first sentence of section 188.029 . . . it would be contradictory nonsense to read the second sentence as requiring a physician to perform viability examinations and tests in situations where it would be careless and imprudent to do so. . . .

Unlike the plurality, I do not understand these viability testing requirements to conflict with any of the Court's past decisions concerning state regulation of abortion. Therefore, there is no necessity to accept the State's invitation to reexamine the constitutional validity of *Roe* v. *Wade*. . . . When the constitutional invalidity of a State's abortion statute actually turns on the constitutional validity of *Roe* v. *Wade*, there will be time enough to reexamine *Roe*. And to do so carefully. . . .

I do not think the second sentence of section 188.029, as interpreted by the Court, imposes a degree of state regulation on the medical determination of viability that in any way conflicts with prior decisions of this Court. . . . No decision of this Court has held that the State may not directly promote its interests in potential life when viability is possible. . . .

. . . [R]equiring the performance of examinations and tests useful to determining whether a fetus is viable, when viability is possible, and when it would not be medically imprudent to do so, does not impose an undue burden on a woman's abortion decision. On this ground alone, I would reject the suggestion that section 188.029 as interpreted is unconstitutional.

### Antonin Scalia Concurs

. . . I share Justice Blackmun's view . . . that [the plurality's opinion on the viability-testing requirement] would effectively overrule *Roe* v. *Wade*. . . . I think that should be done, but would do it more explicitly. . . .

The outcome of today's case . . . needlessly . . . prolong[s] this Court's self-awarded sovereignty over a field where it has little proper business since the answers to most of the cruel questions posed are political and not juridical—a sovereignty which therefore quite properly, but to the great damage of the Court, makes it the object of the sort of organized public pressure that political institutions in democracy ought to receive. . . .

. . . It . . . appears that the mansion of constitutionalized abortion-law, constructed overnight in *Roe* v. *Wade*, must be disassembled door-jamb by door-jamb, and never entirely brought down, no matter how wrong it may be.

### Harry A. Blackmun Dissents Joined by Thurgood Marshall and William Brennan

Today, *Roe* v. *Wade* . . . and the fundamental constitutional right of women to decide whether to terminate a pregnancy, survive but are not secure. . . . [T]he plurality and Justice Scalia would overrule *Roe* (the first silently, the other explicitly) and would return to the States virtually unfettered authority to control the quintessentially intimate, personal, and life-directing decision whether to carry a fetus to term. . . .

In the plurality's view, the viability-testing provision imposes a burden on second-trimester abortions as a way of furthering the State's interest in protecting the potential life of the fetus. Since under the *Roe* framework, the State may not fully regulate abortion in the interest of potential life . . . until the third trimester, the plurality finds it necessary, in order to save the . . . testing provision, to throw out *Roe's* trimester framework. . . . In flat contradiction to *Roe* . . . the plurality concludes that the State's interest in potential life is compelling before viability. . . .

. . . The statute's plain language requires the physician to undertake whatever tests are necessary to determine gestational age, weight, and lung maturity, regardless of whether these tests are necessary to a finding of viability. . . . Had the plurality read the statute as written, it would have had no cause to reconsider the *Roe* framework. . . . As written, section 188.029 is an arbitrary imposition of discomfort, risk, and expense, furthering no discernible interest except to make the procurement of an abortion as arduous and difficult as possible. . . .

. . . [T]he plurality asserts that the trimester framework cannot stand because the State's interest in potential life is compelling throughout pregnancy, not merely after viability. . . . The opinion contains not one word of rationale for its view of the State's interest. This "it-is-so-because-we-say-so" jurisprudence constitutes nothing other than an attempted exercise of brute force; reason, much less persuasion, has no place. . . .

. . . I remain convinced, as six other Members of this Court 16 years ago were convinced, that the *Roe* framework, and the viability standard in particular, fairly, sensibly, and effectively functions to safeguard the constitutional liberties of pregnant women while recognizing and accommodating the State's interest in potential human life. The viability line reflects the biological facts and truths of fetal development; it marks that threshold moment prior to which a fetus cannot survive separate from the woman and cannot reasonably and objectively be regarded as a subject of rights or interests distinct from, or paramount to, those of the pregnant woman. . . .

The plurality repudiates every principle for which *Roe* stands. . . . If the Constitution permits a State to enact any statute that reasonably furthers its interest in potential life, and if that interest arises as of conception, why would the Texas statute fail to pass muster? One suspects that the plurality agrees.

. . . "[N]ot with a bang, but a whimper," the plurality discards a landmark case of the last generation, and casts into darkness the hopes and visions of every woman in this country who had come to believe that the Constitution guaranteed her the right to exercise some control over her unique ability to bear children. The plurality does so either oblivious or insensitive to the fact that millions of women, and their families, have ordered their lives around the right to reproductive choice, and that this right has become vital to the full participation of women in the economic and political walks of American life. . . .

. . . [T]he plurality pretends that it leaves *Roe* standing, and refuses even to discuss the real issue underlying this case: whether the Constitution includes an unenumerated right to privacy that encompasses a woman's right to decide whether to terminate a pregnancy. . . .

. . . For today, at least, the law of abortion stands undisturbed. For today, the women of this Nation still retain the liberty to control their destinies. But the signs are evident and very ominous, and a chill wind blows.

### John Paul Stevens Dissents

The Missouri statute defines "conception" as "the fertilization of the ovum of a female by the sperm of a male,"[19] even though standard medical texts equate "conception" with implantation in the uterus, occurring about six days after fertilization. Missouri's declaration therefore implies regulation not only of previability abortions, but also of common forms of contraception such as the IUD and the morning-after pill. . . .

. . . Because I am not aware of any secular basis for differentiating between contraceptive procedures that are effective immediately before and those that are effective immediately after fertilization, I believe it inescapably follows that the preamble to the Missouri statute is invalid under *Griswold* and its progeny. . . .

Indeed, I am persuaded that the absence of any secular purpose for the legislative declarations that life begins at conception and that conception occurs at fertilization makes the relevant portion of the preamble invalid under the Establishment clause of the First Amendment. . . .

#### References

**1.** 410 U.S. 113 (1973).

**2.** Missouri Revised Statutes, § 1.205.1 (1), (2) (1986).

**3.** Maher v. Roe, 432 U.S., at 474.

**4.** 432 U.S. 464 (1977).

**5.** 432 U.S. 519 (1977).

**6.** 448 U.S. 297 (1980).

**7.** P.L. 94–439, § 209, 90 Stat. 1434.

**8.** Maher, 432 U.S., at 474.

**9.** Webster v. Reproductive Health Services, Inc., 851 F. 2d, at 1079 (1988).

**10.** Brief for Appellants 43.

**11.** Brief for Appellees 31–32.

**12.** Webster, 851 F.2d, at 1075, n.5.

**13.** Roe, 410 U.S., at 165.

**14.** 439 U.S. 379 (1979).

**15.** 428 U.S. 52 (1976).

**16.** 462 U.S. 416 (1983).

**17.** Garcia v. San Antonio Metropolitan Transit Authority, 469 U.S. 528 (1985).

**18.** 381 U.S. 479 (1965).

**19.** Missouri Revised Statutes, § 188.015 (3) (1986).

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## Effects of a Comprehensive Program . . .

*(Continued from page 169)*

group and the majority of the comparison group had been in special programs for pregnant and parenting teemagers years ago, virtually none were receiving any related services at the time of the most recent interview. This is not too surprising, since there are few programs geared to disadvantaged young mothers who are no longer teenagers. It remains to be seen whether the recently enacted welfare reform legislation (the Family Support Act of 1988) will dramatically alter the range of opportunities for this high-risk population of young mothers.

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*(Continued from page 163)*

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# DIGEST

## Chorionic Villus Sampling Is Useful Alternative To Amniocentesis, Despite Slightly Higher Risk

Chorionic villus sampling, an alternative to amniocentesis for early prenatal diagnosis, is associated with only a slightly higher rate of subsequent fetal loss than amniocentesis. In the first large collaborative study to compare chorionic villus sampling to amniocentesis,[1] both procedures successfully yielded diagnoses in 98–99 percent of the cases. Moreover, chorionic villus sampling did not produce any incorrect diagnoses.

In chorionic villus sampling (CVS), cells are collected from the developing placenta by a catheter that is inserted through the cervix and guided by ultrasound. The procedure has two distinct advantages over amniocentesis: It can be performed 7–10 weeks earlier in pregnancy and can yield results somewhat faster. Because of concern that CVS might be associated with a higher fetal loss rate than that associated with amniocentesis, the National Institute of Child Health and Human Development sponsored a seven-center collaborative study* that contrasted the two procedures.

The seven university centers participating in the study had each been routinely offering both procedures. The study compared the experiences of 2,278 women who underwent CVS with those of 671 controls who chose amniocentesis. Women in both groups were recruited during the first trimester of a viable pregnancy (verified by ultrasound); the majority were well-educated, private patients whose primary reason for seeking prenatal diagnosis was their age (most were 35 and older). Thirty-one women suspected of seeking diagnosis for reasons of sex determination were excluded from the CVS sample.

The study was designed so that the women in each group would be examined at comparable gestational ages. The diagnoses and immediate outcomes of the procedure were monitored, and all women filled out a questionnaire postpartum. In addition, their babies were examined by a pediatrician affiliated with the study.

A genetic diagnosis could be obtained for 97.8 percent of the CVS sample and 99.4 percent of the amniocentesis sample, a statistically significant difference. Among the 49 women who had CVS but for whom a diagnosis could not be made (mostly because not enough tissue was collected), 16 chose to undergo another CVS, while 33 elected either to undergo no further testing or to wait for amniocentesis.

Among women who had elected to have CVS, there were no errors either in sex determination or in diagnosis of the three major trisomies (fetal chromosomal abnormalities that can survive through birth). A very small proportion of women in the CVS sample (0.8 percent) had to subsequently undergo amniocentesis because of ambiguous diagnostic results. Similar percentages of abnormal pregnancies were detected by the two procedures, and the distributions of types of abnormalities were similar as well.

The rates of fetal loss associated with each procedure were 7.2 percent among women who had undergone CVS and 5.7 percent for those who had had amniocentesis. (These rates include terminations of abnormal pregnancies, as well as spontaneous abortions, stillbirths and neonatal deaths.) Once the investigators had adjusted for the slight variations in maternal and gestational age, they found CVS to be associated with a slightly elevated risk of fetal loss compared with amniocentesis (0.8 percentage points), but this difference was not statistically significant.

Most of the difference in fetal loss occurred before the second trimester evaluation—spontaneous or missed abortions accounted for 3.5 percent of the fetal loss in the CVS sample, compared with 2.5 percent in the amniocentesis group. The rate of elective abortion due to chromosomal abnormalities was also slightly higher among the women who had undergone CVS. Overall, nearly one percent of the women in the CVS sample appear to have chosen to terminate pregnancies for reasons of sex selection, despite the study's attempts to exclude such women from the analysis.

The rate of fetal loss among the CVS sample was directly related to the number of times the catheter needed to be inserted to successfully complete the procedure. Procedures requiring 3–4 attempts to retrieve chorionic tissue carried a loss rate of 10.8 percent, compared with 2.9 percent for samplings achieved with just one pass (a fourfold increased risk). The study also found that when the placenta is positioned high in the uterus, the risk of fetal loss is three times greater (10.3 percent vs. 3.5 percent).

Within four days of CVS, 21.9 percent and 32.2 percent of the women complained of cramping and spotting, respectively. (Among women who had undergone amniocentesis, the corresponding proportions at 20 days after the procedure were 11.5 percent and 1.3 percent.) These symptoms, the two most common side effects immediately following CVS, usually disappeared within six weeks. Furthermore, none of the women experienced serious infection or septic shock. The results of the postpartum examinations indicate that the CVS and amniocentesis groups had a similar incidence of low birth weight and cesarean section, as well as similar lengths of gestation and of hospital stay. The babies born to women in both groups also had almost identical Apgar scores.

In their analysis of the findings, the researchers claim that the very small difference in the diagnostic success rates (97.8 percent vs. 99.4 percent) "would probably be acceptable to many patients." Apparent diagnostic errors were rare; no normal CVS diagnoses were later contradicted by clinically discovered abnormalities in newborns. Although the risk of septic shock associated with CVS has been acknowledged (but still not quantified), the authors believe that the risk of infection is quite low, provided that appropriate precautions—careful sterile technique, the use of a new catheter for each pass and a policy of never trying more than three passes—are taken.

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*The seven hospital centers participating in the study were Thomas Jefferson Medical College, Philadelphia; Mount Sinai School of Medicine, New York; Yale University School of Medicine, New Haven; Northwestern University School of Medicine, Chicago; Michael Reese Hospital and Medical Center, Chicago; Baylor College of Medicine, Houston; and University of California Medical Center, San Francisco.

The researchers also note that "the data do suggest some excess risk [of fetal loss] with CVS." To keep rates of fetal loss and complications low, they recommend that CVS be done only at "medical centers that intend to commit adequate resources to the procedure and to do a substantial number" of them. Given the finding that the fetal loss rate was lowest when just one attempt at sampling was needed, the investigators suggest that medical personnel be trained for the procedure with this goal in mind. The authors conclude that "chorionic villus sampling is a safe and effective technique for the early prenatal diagnosis of cytogenetic abnormalities, but . . . probably entails a slightly higher risk of procedure failure and of fetal loss than does amniocentesis."—*L. Remez*

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## Low-Birth-Weight Babies Often Have Many Health Problems in Childhood

Throughout childhood, children who were of low birth weight have more chronic conditions, are hospitalized more often and generally exhibit a pattern of poorer health than do children who were of normal birth weight. However, despite their higher rates of disease, low-birth-weight children are no more likely than are their normal-birth-weight counterparts to have been to a physician. These are some of the findings from the Child Health Supplement (CHS), which collected data on the health status of a representative sample of U.S. children as part of the National Health Interview Survey.[1]

In 1981, 15,400 interviews were carried out among the parents of children aged 17 or younger that year. Among the topics addressed were the children's lifetime number of chronic conditions, lifetime number of hospitalizations, limitations of activity, number of days spent in bed and number of school days missed because of illness in the year preceding the survey, and number of physician visits made in the year before the survey. In addition, parents were asked whether they considered their children's health status to be excellent, good, fair or poor.

Children who had weighed less than 2,500 g (5.5 lbs.) at birth were considered to be of low birth weight, and those who had weighed 2,500 g or more were considered to be of normal birth weight. About eight percent of the children in the CHS sample were of low birth weight—seven percent of the children under age six, about nine percent of those aged 6–11 and about eight percent of those aged 12–17. Overall, seven percent of the white children and 15 percent of the black children were of low birth weight.

Children born underweight were more likely than those of normal birth weight to have one or two chronic conditions, but the difference between the groups reached statistical significance only among those with three or more chronic illnesses (10 percent and seven percent, respectively). Among children with three or more chronic conditions, low-birth-weight blacks, whites, males and females all had significantly higher rates of chronic illness than did their normal-birth-weight counterparts. Further, low-birth-weight children under age six were twice as likely as comparable normal-birth-weight children to have three or more chronic conditions (eight percent and four percent, respectively).

Among all children, respiratory illnesses were the most common chronic condition. The rate of respiratory disease among low-birth-weight children was 204 cases per 1,000, compared with 163 per 1,000 among normal-birth-weight children, a statistically significant difference. Although conditions of the central nervous system, the sensory organs, the digestive tract, the blood or the blood-forming organs occurred less frequently than did respiratory conditions, low-birth-weight children were significantly more likely than normal-birth-weight children to suffer from each of them.

Forty-one percent of children born underweight had been hospitalized at least once, compared with 33 percent of normal-birth-weight children; this difference was highly significant among children hospitalized two or more times (17 percent and 11 percent, respectively). In every subgroup, low-birth-weight children were at least 50 percent more likely than normal-birth-weight children to have been hospitalized more than once. The difference between the birth-weight groups was greatest among children under age six: Low-birth-weight children in this age-group were twice as likely as normal-birth-weight children to have been hospitalized two or more times (11 percent and five percent, respectively). Interestingly, in both birth-weight groups, males were more likely than females and whites were more likely than blacks to have been hospitalized two or more times.

In the year before the survey, low-birth-weight children were significantly more likely than normal-birth-weight children to have spent eight or more days in bed because of illness. Low-birth-weight children under the age of six were two times more likely than comparable normal-birth-weight children to have spent eight or more days in bed over the preceding year (16 percent vs. eight percent); among children aged 6–17, the difference between the groups (nine percent vs. eight percent) was not statistically significant. Whereas low-birth-weight white children were about 40 percent more likely than normal-birth-weight white children to have spent eight or more days in bed in the year preceding the survey (12 percent and eight percent, respectively), low-birth-weight black children were about 85 percent more likely than their normal-birth-weight counterparts to have done so (11 percent and six percent, respectively).

There were no significant differences by birth weight in the proportions of school-aged children who had missed 10 or fewer days of school for health reasons. However, low-birth-weight children were about 50 percent more likely than normal-birth-weight children to have been absent from school 11 days or more during the year preceding the survey. Among low-birth-weight children, blacks and those whose mothers had had fewer than 12 years of schooling were more likely than other children to have been repeatedly absent from school.

Low-birth-weight children were slightly more likely than their normal-birth-weight counterparts to have to restrict their activity (five percent and four percent, respectively), keeping in mind that the proportion of U.S. children whose activities are limited because of poor health is very small. However, the difference between birth-weight groups in restriction of activity reached statistical significance only among children aged 6–11 (seven percent and four percent, respectively) and among whites (five percent vs. four percent).

Within nearly every age, race, sex and maternal education category, the parents of low-birth-weight children were about two times more likely than the parents of normal-birth-weight children to perceive the health status of their children as being fair or poor. However, parents of older children who were born underweight were less likely than parents of younger low-birth-weight children to perceive their children as being in poor health (six percent among children aged 12–17 vs. nine percent among those under age six).

In contrast to the other health indicators, there were no significant differences between low-birth-weight and normal-birth-weight children in the number of physician visits they made in the year before the survey. In fact, low-birth-weight children were slightly more likely than normal-birth-weight children to have made no physician visits that year (27 percent vs. 24 percent), although the difference was not statistically significant. Nevertheless, among both low-birth-weight and normal-birth-weight children, the proportion of those who had made no physician visits decreased as maternal education level increased.

For most of the health indicators, the relative risk of excessive morbidity was higher among children who had weighed less than 1,500 g at birth (considered to be of very low birth weight) than among those who had weighed 1,500–2,499 g. However, because very low birth weight children represent only about eight percent of all low-birth-weight children, those who weighed 1,500–2,499 g at birth made the greatest contribution to the pool of low-birth-weight children.

According to the researchers, the lack of difference in the number of physician visits made by low-birth-weight and by normal-birth-weight children may represent inequality in access to ambulatory health care. Further, they maintain that the proportion of low-birth-weight children in the younger age-groups who are at risk for health problems associated with low birth weight can be expected to increase, since the rate of underweight births has not decreased to the same degree as the rate of infant mortality among this group of children. Nevertheless, they point out, normal-birth-weight children constitute the largest group of those with illnesses, indicating that the physical, social and psychological environment after birth has a major impact on the health of children.—*J. Reich*

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## Oral Contraceptive Use Linked to Chlamydial, Gonococcal Infections

Oral contraceptive users may be at increased risk for the two most common sexually transmitted diseases (STDs), according to a recent six-month study of women attending an Alabama STD clinic.[1] Rates of chlamydial and gonococcal infection were approximately 70 percent higher among pill users than among women who were sterilized or were using IUDs. Pill users also were four times as likely as nonusers to have abnormal cervical tissue growth (cervical ectopy), which may have contributed to the higher rate of chlamydial infection.

A total of 818 nonpregnant 19–29-year-old women, who were using various methods of contraception, were recruited from the STD clinic of the Jefferson County Department of Health in Birmingham, Alabama. Of these, 617 women used oral contraceptives, 158 had been sterilized and 43 were using IUDs. Data for this study were taken from a larger study of the effectiveness of nonoxynol-9 as a prophylaxis against chlamydial and gonococcal infections.[2]

At the initial clinic visit, cultures were obtained for both chlamydia and gonorrhea, and participants were scheduled for monthly follow-up visits during the six-month study period. At each monthly clinic visit, a clinical nurse practitioner obtained specimens that were cultured for chlamydia and gonorrhea and noted any signs of ectopy (defined as any visible growth of endometrial tissue from the cervical os). Women who had infections at entry into the study or who developed an STD during the six-month study period were treated and temporarily suspended from the trial until the sucess of treatment was confirmed. All women were asked to keep a daily diary of sexual activity during the study, and only those with this complete information were included in the analysis (73 percent of pill users and 72 percent of nonusers).

The median age for all women was 23 years. Eighteen percent of the women were married; 89 percent were black and the rest were white. Pill users and nonusers had about the same median number of partners per month (1.1 vs. 1.2), but median values differed for other variables: Pill users had intercourse slightly less frequently per month (5.9 vs. 7.0), were substantially younger (22 vs. 26 years) and had had fewer live births (one vs. two).

Overall, women using the pill had a 73 percent higher rate of chlamydia and a 70 percent higher rate of gonorrhea compared with nonusers, after adjustment for frequency of intercourse, number of partners, age, number of pregnancies and number of live births. The researchers found that the number of sex partners was positively correlated with the rate of chlamydial infection ($p<0.001$), while age was negatively correlated ($p<0.001$). The number of sex partners also was positively related to the rate of gonococcal infection ($p<0.001$), as was the number of live births ($p<0.01$).

Forty-six percent of the oral contraceptive users had cervical ectopy, compared with 19 percent of the nonusers. The relative prevalence of ectopy for pill users relative to nonusers was 4.01 after the investigators adjusted for the effects of reproductive history, sexual activity and age. Women with cervical ectopy were almost 50 percent more likely to have chlamydial infections than were women without ectopy. Among women without ectopy, pill users had nearly twice the rate of chlamydial infections as nonusers. Relative to nonusers with no cervical ectopy, pill users with ectopy had a rate of chlamydia 2.65 times higher, while nonusers with ectopy had a rate 2.54 times greater. There was no association between cervical ectopy and the rate of gonorrhea.

There did appear to be a direct relationship between the type of progestins in the pills and the risk of gonorrhea. Compared with nonusers, women using pills containing norethindrone and norgestrel had a significantly increased rate of gonococcal infection, while those using pills containing norethindrone acetate did not.

None of the women in the study used a diaphragm and only two percent of the women's partners used condoms regularly, so lower rates of infection in the comparison group could not be attributed to the use of barrier methods. The number of sex partners confounded the association between chlamydia and oral contraceptive use; the crude rate among pill users relative to nonusers was 1.95, but it dropped to 1.73 after the investigators adjusted for the effects of sexual activity. The investigators mention two caveats regarding their findings: sexual activity may have been measured imperfectly, and some of the nonusers may have previously used the pill. Even so, the study confirms earlier findings linking oral contraceptives to higher rates of both cervical ectopy[3] and chlamydial infection.[4] The researchers conclude, "These findings suggest that women using oral contraceptives . . . should be screened more actively than nonusers of oral contraceptives for both gonorrhea and chlamydia."—*M. Witwer*

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## Vasectomy Proves To Be Preferable to Female Sterilization

Male sterilization is in almost every way preferable to female sterilization, according to a recent Danish study. The overall cost of a female sterilization procedure—not including treatment for any postoperative complications—is four times that of a male sterilization procedure, and women are much more likely than men to experience both minor and major complications following the operation. Furthermore, regret is two-thirds again as high among women undergoing tubal occlusion as among men undergoing vasectomy.[1]

Questionnaires were sent to 810 men and 594 women who had undergone sterilization at Frederiksborg County Hospital in Hørsholm, Denmark, between January 1, 1978, and December 31, 1982. The response rate was high—88 percent among men and 92 percent among women. The 1,255 respondents answered questions about prior contraceptive use, abortions and births, as well as about previous and present socioeconomic status and family structure. They were also asked why they had undergone sterilization and if they had experienced any short-term or long-term complications or had felt any regret related to the procedure. Other necessary data were obtained from hospital records.

The vast majority of those surveyed (97 percent of men and 95 percent of women) expressed no regret over having been sterilized. However, the investigators note some significant differences in the impact—both physical and emotional—of sterilization on the two groups. Following the operation, 128 men (18 percent) experienced minor discomfort or pain; 48 (seven percent) returned to the hospital, and two were admitted for removal of a hematoma. In contrast, 138 women (25 percent) experienced minor discomfort or pain and 38 (seven percent) had minor complications. Further, seven women (one percent) experienced major complications, such as bleeding or postoperative infection, and 53 (10 percent) had pelvic pain.

Most of the respondents said that the sterilization had not affected their sex lives. Although 13 women (two percent ) and 22 men (three percent ) said that their sex lives had deteriorated, 197 women (36 percent) and 284 men (40 percent) said that their sex lives had improved.

Twenty-eight women (five percent) and 19 men (three percent) regretted having opted for sterilization ($p<0.05$). The primary reason for regret among both groups was a desire for more children (63 percent of the men and 61 percent of the women).

Sterilization failure was low. Four of the men caused a pregnancy 1–4 months after the procedure, and eight of the women became pregnant 1–9 months afterward. (One of the women had an ectopic pregnancy.) All underwent a second procedure, as did three men for whom postoperative histologic evaluation found no sign of the vas deferens among the tissues removed during the vasectomy.

Because patients at the Frederiksborg County Hospital do not pay for their care, the researchers could not determine the exact cost of the procedures. However, they estimated that in U.S. dollars, an outpatient vasectomy (as all but five in the study were) would cost about $60, while the cost of a tubal occlusion, which requires the use of general anesthesia and a possible overnight stay, would be $240.

The researchers acknowledge that although about 25 percent of the women said they experienced long-term sequelae to the procedure, very few said they regretted having been sterilized. The investigators conclude that "in many respects, vasectomy is to be preferred to female sterilization whenever a couple seeks a permanent solution to fertility control." They note that the husbands of women considering sterilization rarely accompany their wives to the preoperative interview, whereas the choice of vasectomy is usually a decision involving both the husband and the wife. If both spouses can be included in the decision process, they point out, the risks and benefits of each procedure for the individual and for the couple can be more thoroughly considered and discussed so that "a more informed decision" may be made.—*P. Rind*

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## Senior Citizen Population Is Growing at Rapid Pace In Developing Countries

Although the low-fertility developed countries are known to have a large proportion of older citizens within their populations, the phenomenon is building unrecognized in developing countries as well, according to an analysis by the U.S. Bureau of the Census of the populations of 22 such countries.[1] In fact, 58 percent of people aged 55 and older currently live in developing countries, and this proportion will increase as time goes on. Almost one million persons in the Third World reach the age of 55 each month; the resulting annual growth rate among the older population is slightly more than three percent, a rate three times that of the developed countries.

The data for the report come from the International Data Base on Aging, computerized files covering a wide variety of variables that are maintained and updated by the Center for International Research within the Bureau of the Census. The data, while not necessarily representative of the developing world as a whole, pertain to 10 countries in Asia, five in Africa and seven in Latin America and the Caribbean (Table 1—page 192); these countries were selected based on data availability, regional representation and importance to the Agency for International Development.

Among the developing regions, the Caribbean has the "oldest" population: Twelve percent of its citizens are 55 and older, compared with 10 percent in Asia, nine percent in Latin America and seven percent in Africa. The report notes that several factors tend to produce older populations in some countries within a region than in others, including a low-fertility rate and emigration of working-age individu-

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als. As Table 1 shows, the proportions can vary greatly among countries within a region; in Asia, for example, the share of the population 55 and older ranges from seven percent in Bangladesh to 17 percent in Hong Kong. Overall, proportions among individual countries range from five percent in Kenya to 22 percent in Uruguay.

The table also indicates how these proportions will change during the next 30 years. By 2020, the proportion of the population 55 and older will double in a majority of Asian countries and will triple in Singapore. Although the proportion will increase slightly in most African countries, it is projected to decline in Malawi. In Latin America and the Caribbean, the proportion will increase moderately in every country except Uruguay, where it will remain about the same.

The median age in almost all the countries in the study is currently younger than 25, and ranges from 19 in Kenya to 33 in Uruguay. However, these medians are expected to rise by 8–10 years over the next three decades; by the year 2020, countries such as Hong Kong and Singapore are expected to have median ages older than 45.

Although the majority of all persons 55 and older live in the developing world, 57 percent of those 75 and older are currently living in industrialized countries. However, this is the fastest growing group within the older population of the developing world, and by the turn of the century, the majority of people aged 75 and older (61 percent) will be living in developing nations, too.

Overall, average life expectancy at birth is 59 years in the developing world, but this average ranges from about 50 years in Bangladesh and Malawi to more than 75 years in Hong Kong, Costa Rica and Jamaica. Although the life-span advantage that women in the developed world have over men is not as great in the developing world, women outlive men in all the countries studied except Bangladesh, where men live 2.3 years longer than women. The report attributes this reversal of the typical worldwide pattern to the low social status accorded women and to the preference that men often receive in the use of scarce resources ranging from medical care to education.

Nonetheless, in most developing countries, as in the developed world, the proportion of women in the older population increases with age. In only four countries—Bangladesh, Zimbabwe, Morocco and Tunisia—do men outnumber women at ages 60 and older. Countries such as Hong Kong, Uruguay and the Republic of Korea already show the large female imbalances at older ages that are seen in industrialized nations, and this pattern is expected to be present by the year 2020 in most of the other countries as well.

The report points to growing concern in some countries, however, over whether traditional mechanisms of support will continue to absorb increasing numbers of widows. In societies in which social security and pension benefits rarely cover more than a small portion of the population, older women have traditionally relied upon extended families and similar informal social systems for support; elderly people rarely live alone, for example. Yet as families become smaller and young women increasingly enter the work force, the prospects that older persons will have children who can provide care and attention are diminishing. The rapid pace of urbanization exacerbates the estrangement of the elderly, as younger persons migrate to the cities, leaving rural populations disproportionately older.

While most women of the developing world have never been employed, the poor economic conditions in developing countries often mean that males who reach older ages cannot stop working. In few developed countries are more than 20 percent of men aged 65 and older in the work force; the proportions are much higher in developing countries, however, reaching 69 percent in both Mexico and Bangladesh.

Surveys from the early 1980s indicate that tremendous differences in educational levels exist between the younger and older generations in a number of countries, with older women being the least educated of all. For example, in China, 41 percent of men aged 25–44 have a secondary education, compared with eight percent of men 60 and older; comparable figures for women are 22 percent and one percent. With the exceptions of Hong Kong and Korea, educational levels are lower in the other developing countries than they are in China.

The report presents an analysis of the number of "dependent" persons (generally defined as those younger than 20 and older than 64) per 100 persons of working age (20–64 years). Although the dependent population in developing countries is now overwhelmingly concentrated in the younger age-group, that pattern will have changed considerably in three decades. In China, for example, 12 percent of the dependent population is currently 65 or older, but in 2020 that proportion will have grown to 31 percent. In Costa Rica, Thailand and Tunisia, eight percent of the dependent population is currently in the older age-group, but in 2020 the proportions will be 23 percent, 20 percent and 16 percent, respectively.

**Table 1. Percentage of population aged 55 and older in 22 developing nations, 1988 and projection for 2020**

| Country | 1988 | 2020 |
|---|---|---|
| **Asia** | | |
| Bangladesh | 7.2 | 11.5 |
| China | 12.2 | 24.0 |
| Hong Kong | 17.0 | 34.5 |
| India | 8.6 | 14.8 |
| Indonesia | 7.8 | 16.4 |
| Rep. of Korea | 10.4 | 23.0 |
| Philippines | 7.5 | 11.6 |
| Singapore | 11.9 | 33.5 |
| Thailand | 9.0 | 18.4 |
| Turkey | 9.7 | 15.6 |
| **Africa** | | |
| Kenya | 5.1 | 5.6 |
| Malawi | 6.3 | 5.8 |
| Morocco | 8.7 | 13.3 |
| Tunisia | 9.9 | 14.9 |
| Zimbabwe | 6.0 | 6.3 |
| **Latin America and the Caribbean** | | |
| Brazil | 9.0 | 15.6 |
| Costa Rica | 8.7 | 19.1 |
| Guatemala | 7.2 | 11.8 |
| Jamaica | 12.0 | 16.6 |
| Mexico | 8.4 | 16.0 |
| Peru | 8.3 | 13.6 |
| Uruguay | 22.0 | 23.3 |

The aging of societies actually represents a success story, the report points out, because it means that infant mortality rates, the incidence of infectious diseases and fertility rates are being reduced and that education and health are improving. However, the study also notes that older populations require different social support services than young populations and that developing nations will have to recognize and plan for these changes if they are to age gracefully.—*J. Johnson*

**Reference**

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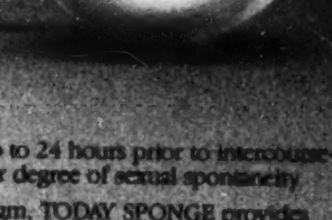

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REFERENCES: 1. McClure DA, Edelman DA: Worldwide method effectiveness of the Today® vaginal contraceptive sponge. *Adv Contracept* 1:305-311, 1985. 2. *Today® Vaginal Contraceptive Sponge: A Technical Review.* Irvine, Calif, VLI Corporation, 1986.

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